ARISTOTLE ON SELF-MOTION

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by

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This thesis is dedicated to the memory of my beloved father,

Byeong-Chan Yoo (1916-90), and mother, Hak-In Kang (1924-98).

Abstract

This thesis attempts to explain Aristotle's conception of the self-mover (introduced in *Physics* VIII. 4-6) by analysing, in particular, the relationship between the locomotive faculty of the soul and the *sumphuton pneuma*.

Aristotle's theory of self-motion calls for resolutions to three major problems: (*a*) how is self-motion to be explained without denying the existence of the first mover, i.e. the ultimate cause of the motions of all sublunary beings? (*b*) how is the self-motion of the living being different from the natural motion of the non-living being? and (*c*) what is the relationship between the unmoved moving part and the moved part of the self-mover (identified as the soul and the body)?

Chapter I discusses (i) some potential problems that Aristotle faces in maintaining the theory of self-motion as a part of his overall theory of natural change, (ii) the characteristics and the relationships of the internal parts of the self-mover, and (iii) the reason for identifying the parts with the soul and the body. Chapter II turns to examine modern views on Aristotle's conception of the soul-body relationship, focusing on the functionalist interpretation of it as entailing compositional plasticity, viz. the view that the same psychological state may be *realised* by several different material states.

Chapter III examines what psychological capacities are necessary for the arousal of animal locomotion and what their interrelationships are, whereas Chapter IV argues against Nussbaum's claim that Aristotle maintains that *phantasia* is an absolutely necessary capacity for an animal to arouse locomotion. Chapter V analyses the locomotive faculty and its relationship with the *sumphuton pneuma*.

On the basis of this examination, this thesis ascribes to Aristotle the following claims: (a_1) that all natural beings have natures for initiating their own motions, which cannot be merely brought about by the external mover, (b_1) that self-motion is differentiated from natural motion in that, although both depend on external conditions, the former, unlike the latter, also depends on the internal condition of the mover, and (c_1) that psychological capacities can be realised only in the *pneuma* and in nothing else.

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Author's Declaration

I declare that the work in this thesis was carried out in accordance with the Regulations of the University of Bristol. The work is original except where indicated by special reference in the text. The thesis has not been presented to any other University either in the United Kingdom or overseas for any other degree.

Signed:  Date : 21 January 1997

Abbreviations

An. Post.	*Posterior Analytics*
DA	*On the Soul*
DC	*On the Heavens*
GA	*Generation of Animals*
GC	*On Generation and Corruption*
HA	*History of Animals*
IA	*Progression of Animals*
Insomn.	*On Dreams*
Juv.	*On Youth, Old Age, Life and Death*
Long. Vit.	*On Length and Shortness of Life*
MA	*Movements of Animals*
Mem.	*On Memory*
Met.	*Metaphysics*
Meteor.	*Meteorology*
NE	*Nichomachean Ethics*
PA	*Parts of Animals*
Ph.	*Physics*
Physiog.	*Physiognomics*
Resp.	*On Respiration*
Sens.	*Sense and Sensibilia*
Somn.	*On Sleep*
Spirit	*On Breath*

The text and the translation for the *MA* are from Nussbaum (1978) and the translation for the *PA* and the *GA* is from Peck (Loeb Series). Otherwise, Greek citations of Aristotle's texts are from the volumes of the Loeb Series and English citations from the Revised Oxford Translation edited by J. Barnes (1984), with minor exceptions which are so stated.

Contents

Introduction

This thesis aims to provide new perspectives on the conception of the self-mover in Aristotle's theory of change. The problem of self-motion in Aristotle has not gone unnoticed.[1] However, it has not received due attention and there are still many problems to be resolved. Moreover, attention has unfairly focused more extensively on, or given priority to, the psychological aspect of the self-mover and, as a result, the significance of its physiological aspect has been neglected.

As we shall presently see, enquiring into Aristotle's conception of the self-mover is eventually enquiring into how to understand its capacity for self-motion which he explains in terms of the two inner parts of the self-mover (i.e. 'the unmoved moving part and the moved part' or 'the soul and the body'). In doing this, I shall focus on the question of whether Aristotle conceives the relationship between soul and body as contingent or as essential or, in other words, whether he maintains that the psychological capacity can be realised in different materials or only in one particular material. This is a significant question for, if their relationship is contingent and if priority is given to the psychological capacity of the self-mover, then we can presumably explain the self-mover in terms only of its psychological capacity. In contrast, if it is essential, then a full account of the self-mover must specify both its psychological capacities and its specific physiological constituent(s). On the basis of a detailed analysis of Aristotle's account of animal locomotion, I shall conclude that his conception of the self-mover implies this latter view.

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[1] E.g. Furley (1978, pp. 55-67); Nussbaum (1978), esp. Essays 1, 3, and 5; Nussbaum and Putnam (1992), pp. 27-56; Gill (1991), pp. 15-34. For a collection of articles on the matter, see Gill and Lennox (eds.) (1994).

Let us first consider some possible questions arising with respect to the conception of the self-mover. There is no doubt that Aristotle discusses the problem of self-motion mainly in *Physics* VIII. 4-6, but nothing else is immediately certain. As a result, the following problems remain puzzling:

(1) Firstly, there arises a question about Aristotle's descriptions of the self-mover in *Ph.* VIII. 4 in relation to the reading of the conception of nature in II. 1. In II. 1, Aristotle tells us that not only living or ensouled beings (i.e. plants and animals) and their parts, but also non-living beings (i.e. the simple bodies-earth, air, fire, water) exist by nature. Since he defines natures as sources of motion and rest that they have within themselves, he seems to be saying that all natural beings are capable of their own motions without necessarily requiring any external mover (192b 9 ff.).[2]

However, in VIII. 4 Aristotle says that there is a difference between the motion of the living being and that of the non-living being (255a 6 ff.). And he appears to regard only living beings as self-movers. He describes the self-mover in various ways: that which moves itself without being moved by anything from without (252b 19 ff.), that which derives its motion from itself (254b 14-15), and that which contains the source of its motion within itself (241b 36-37). However, these descriptions do not at all help us distinguish the living being from the non-living being. For since, as mentioned, all natural beings are said to have within themselves natures that are the sources of their own motion, the non-living beings (i.e. the simple bodies), also appear to meet the conditions for self-movers. If so, what is the difference between natural motion, i.e. motion in virtue of nature, and self-motion, i.e. motion in virtue of soul, Aristotle has in mind?

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[2] I place three and more than three references to Aristotle's texts in footnotes for a smoother reading.

Since natures are said to belong to all natural beings and the capacity for self-motion to the living being only, is it the case that Aristotle denies natures to the simple bodies or that he ascribes some additional sources of motion to living beings without denying natures to the simple bodies? More specifically, we might raise the following questions depending on whether natures are characterised as active or passive sources: if they are active sources, (1^a) does Aristotle deny natures in the simple bodies for the sake of ascribing the capacity for self-motion (in virtue of natures as active sources) to the living being? or (1^b) does he still allow natures to the simple bodies, whereas he ascribes an extended role of natures to the living being? And, if the answer to (1^b) is positive, we also need to ask (1^c) what sort of extended role Aristotle postulates in the case of the living being. On the other hand, if natures are passive sources, there would arise a modified version of question (1^b) which still requires the sort of question (1^c): does Aristotle think that the natures of non-living beings are passive, whereas the natures of living beings are active? and what are these active sources that are peculiar only to the living being?

(2) In effect, it is not even clear whether Aristotle ever acknowledges the living being as a self-mover. This is mainly due to his statement at *Ph.* VIII. 6, 259b 6-17 where he appears to say that there is no self-motion because the most plausible example of self-motion, i.e. animal locomotion, is also 'in a strict sense' affected by the environment, i.e. an external mover.

(3) There is also a question about whether he thinks that all living beings are capable of self-motion. In discussing self-motion, he uses the locomotion of the animal as an example and does not provide any discussion of the motion of the plant. Moreover, the reading of the passages at 253a 11-20 and 259b 6-17 seems to suggest that, if there is any self-motion, it would be locomotion. However, Aristotle elsewhere ascribes the capacity for self-motion

not only to animals, but to all ensouled beings which include plants (255a 6-7). Thus we should ask whether he accepts not only animals, but also plants, as self-movers.

(4) Aristotle explains self-motion in terms of internal parts of living beings (see esp. 257b 2 ff.). However, it is unclear (4^a) what the internal parts characterised as the unmoved moving part and the moved part are, (4^b) what their characteristics are, and (4^c) what their relationships are.

There are other questions specifically concerning animal locomotion.

(5) Aristotle in general explains each capacity of the living being in terms of a faculty of the soul (*DA* 413a 21 ff.). For instance, the living being is capable of nutrition in virtue of the nutritive faculty and the animal is capable of sense-perception in virtue of the sensitive faculty. Aristotle also appears to explain the capacity for locomotion in terms of the locomotive faculty (*DA* 414a 30 ff.). However, in *DA* III. 9-10 he introduces the appetitive faculty as the source of locomotion and seems to identify it with the locomotive faculty. There is, however, a difficulty in accepting the seeming identification of the two faculties. For Aristotle tells us that all animals have the appetitive faculty, whereas only some of them are capable of locomotion.[3] Thus the question of what exactly he thinks of the locomotive faculty (or the source of locomotion) remains obscure.

(6) Another relevant question is what capacities animals require for locomotion. Aristotle's ascription of the capacity for locomotion only to some animals suggests that the conditions for being an animal are not sufficient for being a locomotive animal. What other capacities are necessary? Since the answer to this question is obscure, what kinds of animals he thinks of as locomotive is also obscure.

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[3] Read 413b 22-24 and 414b 1-6 in conjunction with 413b 1-4 and 415a 6-7.

(7) Nobody will deny that locomotion is a clear example of a motion that the animal brings about by involving its body. However, if other psychological capacities are involved in the arousal of it, do they also involve a body and its change? The present thesis deals with all the above questions.[4] Once they are resolved, Aristotle's conception of the self-mover will appear consistent and sound.

Why does the conception emerge as an issue at all in the *Physics*? This question is closely related to Aristotle's overall project in the treatise. In I. 1, he sets out to determine the primary causes or first principles of the existent through observations of particulars and theoretical reflections on them (184a 10 ff.). In VIII, he has established a number of principles based on his earlier examination of beings in motion. Among them is the principle that everything in motion must be moved by something else (e.g. 241b 34 ff.) until the chain of causes reaches the first unmoved mover which imparts motion to others without being moved (258b 32 ff.; *Met.* 1072a 21 ff.). Aristotle attempts to verify the principle by applying it again to beings in nature. At this stage, he notices that natural beings appear to initiate their motion without requiring any external mover or cause (*Ph.* 252b 13-28). However, Aristotle is unwilling to accept this observation as true. For if there are such beings, it may not be true that everything must be moved by something else, nor that there must be a first mover that is ultimately responsible for the motions of all beings. However, Aristotle acknowledges that the motion of living beings is more problematic than that of non-living beings and so they must be distinguished. Therefore his discussion of self-motion is initially an effort to distinguish the status of living beings from that of non-living beings,

[4] Since my main concern is animal locomotion, (3) concerning the self-motion of the plant, will receive only cursory attention.

both of which must not violate the principles he tries to establish.[5] Argued in this way, we shall see that for Aristotle there is no self-motion *simpliciter*.

Chapter I begins by examining this matter in detail. Then I shall, in Sec. 1 (*b*) and (*c*), discuss whether the natures in the simple bodies must be regarded as passive sources.[6] We shall see that Aristotle maintains self-motion as a peculiar aspect of living beings 'presupposing the existence of the first mover' as the simple bodies do. Thus the motion of the simple bodies (e.g. fire moving upwards or earth moving downwards) in relation to the first mover need not be understood as purely passive; it is active in a more qualified sense than that of living beings. I shall argue that Aristotle acknowledges natures as active sources to all natural beings, whilst he ascribes an extended role of natures to living beings.

The rest of Chapter I primarily concerns the two internal parts of the self-mover (see questions (4^a) and (4^b) above). As mentioned, Aristotle explains the self-motion of living beings in the *Ph.* in terms of its internal parts, i.e. the unmoved moving part and the moved part. Aristotelian commentators usually identify the parts with the soul and the body without explaining why. I shall thus examine why they should be identified with each other by comparing the characteristics of the parts expounded in the *Ph.* with those of the soul and the body in the *DA*.

Once they are identified, Chapter II embarks on the question how we should understand their relationships to each other, i.e. (4^c). In effect, it is difficult, on the basis of the account given in the *Ph.*, to understand what and how the internal parts of the living being contribute to the arousal of living activities. At this stage, the identification of the parts with the soul and the body provides us with more fruitful sources concerning their roles in

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[5] So Furley (1978, p. 59) terms this 'a clash of motives'. Cf. Nussbaum (1978), p. 117.

[6] See question (1) above. Cf. e.g. Beavers (1988, pp. 357-374) who suggests that it is misleading to read natures in the simple bodies as the active sources for the reason that they presuppose the existence of the first mover.

living activities, a subject dealt with by Aristotle elsewhere. In this Chapter, by focusing mainly on the *DA* contexts, I shall examine some of the contemporary interpretations of Aristotle's hylomorphism and what kinds of problems they entail.

Although Aristotle's hylomorphism has long been of philosophical interest in its own right, it is undeniable that the contemporary enthusiasm in the philosophy of mind has accelerated interest in it. In accordance with the development of modern philosophy of mind, Aristotle's theory of the soul-body distinction has been viewed from many different perspectives such as dualism and various forms of materialism.[7]

One of the powerful materialist interpretations is functionalism. In contrast to Furley who explains animal locomotion in terms only of the animal's psychological capacity without considering its physiological aspect,[8] Nussbaum, for instance, does consider its physiological aspect as well.[9] However, she claims that Aristotle regards as contingent both the form-matter relationship in an artefact and the soul-body relationship in a living being. For instance, as the shape of a star can be realised in many different kinds of matter, souls can be realised not only in flesh and bones, but also in many other materials, so all the forms are compositionally plastic (or multiply realisable).

It is important to note that the functionalist does not deny that there is a physiological change occurring in accordance with a psychological activity. Nor does she claim that a psychological capacity can be realised in any and every sort of matter. What she claims is that it is not necessary for it to be realised in one and only one sort of matter, but in many different sorts of matter in so far as their physical properties allow. In this way, she maintains the compositional plasticity of form over matter within certain limits.[10] Thus this

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[7] For detailed references, see Ch. II.
[8] Furley (1978), esp. pp. 64-65.
[9] See note 1 above.
[10] E.g. Nussbaum and Putnam (1992), p. 45 & p. 48.

view embraces the identification of form with matter at a token level, but denies it at a type level. That is, it denies that in the case of animals it is not essential that souls must be realised in flesh and bones and in nothing else. The functionalist effort to deny the type-type identification of the soul with the body may well be understood as an attempt to account for Aristotle's teleological account of living beings and their activities.[11] It is undeniable that Aristotle objects to Empedocles's account of the teleological activities of natural beings as the chance events of 'material bodies'.[12] Noting this point, the functionalist claims that Aristotle explains 'the eye or the heart not in terms of what it is made of but in terms of its function—what it *does*, what it is *for*'.[13] Thus she goes on to claim that, since for Aristotle 'form' signifies 'function', he would acknowledge that something is a heart, for instance, in so far as it pumps blood without reference to what it is made of. Indeed, this line of interpretation is strong since it accounts for Aristotle's frequent analogy between the hylomorphic constituents of the living being and those of the artefact (e.g. *DA* 412b 10 ff.) and, also, his emphasis on the necessity of some particular sort of matter of an individual being or substance.[14]

However attractive the functionalist view may appear, there are those who still remain unconvinced by it.[15] For instance, Code and Moravcsik argue that the compositional plasticity of form is a modern conception which Aristotle did not think of.[16] These anti-functionalists (or essentialists) argue, on the basis of an analysis of Aristotle's conception of

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[11] See Code and Moravcsik (1992), p. 135.

[12] *Ph.* 198b 34-199a 8; cf. 187a 20 ff. See also Aristotle's objection to his predecessors' materialist account of the soul at *DA* 404a 29 ff.

[13] Cohen (1992), pp. 58-59. Cf. Nussbaum and Putnam (1992), p. 74 ff.

[14] See e.g. *Met.* 1036a 26 ff. ('snub' is the concavity in the 'nose' or the animal is the soul embodied in 'flesh and bones').

[15] The functionalist interpretation has been criticised by those who claim (i) that the psychological activity does not accompany any physiological change (e.g. Burnyeat, 1992, pp. 15-26), (ii) that their relationship is essential (Lloyd, 1992, pp. 38-66; M. Frede, 1992, pp. 93-107; Code and Moravcsik, 1992, pp. 129-145), and (iii) that their relationship is dualistic (e.g. Robinson 1983, pp. 123-144; Heinaman, 1990, pp. 83-102).

[16] Code and Moravcsik (1992), pp. 133-134.

essences or natures, that, in the case of living beings, the soul can be actualised in only one sort of matter.[17] That is, the relationships between the soul and the sort of matter in which it is actualised are essential. However, there is a difficulty in refuting the functionalist interpretation on the basis of such conceptual analyses since it is hard to show that there *must* be an essential connection between soul and body. For the functionalist does not have to deny the nature of a living being; that is, she would still argue for the compositional plasticity of form, as accepting the essence or nature of the being at a token level. Since conceptual analyses are controversial in evaluating Aristotle's own position on the soul-body relationship, we need to focus on what Aristotle says in the case of a specific example of living activities.

It is a commonplace that Aristotle's theory of the soul covers a much wider area than the contemporary philosophy of mind does. The latter has attempted to understand human minds and their relationships to bodies by analysing such *mental* activities as perception, intention, and thinking. However, for Aristotle the conception of the soul is not a peculiar characteristic that belongs only to human beings; it belongs to all living beings including irrational animals and even plants. Thus his theory of the soul concerns not only mental activities, but also such activities as growth, digestion, reproduction, locomotion, etc. Thus, when we are talking about Aristotle's psychology, we are indeed talking about his discussion of the activities of the living being in general. It then seems that, in trying to understand Aristotle's conception of the relationship of the soul and the body, the analysis of other activities of the living being is as important as that of mental activities that belong only to a limited class of living beings. In effect, this suggests that, if one is to pick up a particular activity as an example to be analysed, one needs to justify oneself for doing so.

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[17] See M. Frede (1992), p. 96 ff.; Code and Moravcsik (1992), pp. 130-131.

Nussbaum (1978), in her commentary on *De Motu Animalium*, makes an unusual attempt in that she sets out to understand the soul-body relationship from the analysis of animal locomotion. However, she pays insufficient attention to the specifics of the soul-body relationship in locomotion and instead tries to deduce this relationship from the controversial ideas about some individual cognitive activities involved in arousing locomotion. She thereby misses the opportunity to understand the relationship in those living activities from the analysis of this specific example, i.e. locomotion. However, it is indeed necessary for us to try to understand the soul-body relationship from the analysis of animal locomotion itself.

Locomotion appears important for several reasons. Firstly, Aristotle's discussion of locomotion in expounding self-motion in the *Ph.* suggests that he takes it to be a phenomenon which is particularly obvious to the senses (e.g. 252b 18 ff.). Secondly, among the various living activities, Aristotle takes locomotion to be prior to other types of motion for at least three reasons: (*a*) it is the one that belongs to more advanced living beings, (*b*) it is manifested at the last stage of their perfection, and (*c*) it brings about lesser changes in the animal body than any other types of motion do (261a 13-26). Finally, locomotion has a significant feature of locomotion which Aristotle does not explicitly tell us about. When such activities as nutrition, sense-perception, thought, and so on, are dealt with, it appears that they are defined in separation from one another by their proper objects and activities. Yet, on some occasions we find that each of those activities are not in separation from one another, but involve others. For instance, an animal utilises its capacity not only for nutrition, but also for sense-perception in order to maintain its life (cf. *DA* 414b 21-415a 12). Since living beings are capable of their activities in virtue of their soul-faculties, the question we are asking is about the relationship of those faculties. We shall

see that locomotion is one interesting example which clearly shows such a connection between soul-faculties.

In Chapter III, Section 1, I shall discuss this thesis in detail. At *DA* 414b 19 ff., Aristotle makes an analogy between soul-faculties and geometrical figures. The point of the analogy is that, as a quadrilateral, for instance, subsumes a triangle, the higher faculties subsume the lower faculties. However, what does this imply? I shall propose that Aristotle wants to make two points with it. (i) In the animal that is capable of more than nutrition, a lower capacity is not for its own sake, but for the sake of higher capacities. For instance, the animal requires the capacity for seeing, for instance, not merely to enjoy seeing an external object as such, but as a necessary condition for locomotion which is, eventually, for the sake of survival (e.g. *DA* 415b 12-14; *Sens.* 436b 18 ff.).

(ii) Another point which has not earned appropriate attention is that the lower faculties are teleologically determined by the higher ones by virtue of being subsumed under them. Aristotle thinks that the animal requires the capacities for recognising an object at a distance (i.e. the distance senses), for recognising it as pleasant or painful, and for pursuing or avoiding it (i.e. *orexis*) in the arousal of locomotion. Furley seems to think that an animal is a self-mover because it is capable of sense-perception, *orexis*, *phantasia*, etc.[18] However, this account is over-generalised and cannot explain the difference Aristotle makes between locomotive animals and non-locomotive animals.

Aristotle maintains that all animals have the appetitive faculty that subsumes the sensitive faculty, but that some of them are incapable of locomotion (e.g. 413b 22-24). He thinks that the capacity for locomotion is related to the capacity for the distance senses (i.e. seeing, hearing, and smelling) that some animals have in addition to the contact senses (i.e.

[18] Furley (1978), p. 64.

touch and taste) (e.g. *Sens.* 436b 18 ff.). However, Aristotle hardly appears to think that the two types of senses are due to two different faculties. If so, he has to explain why some animals have the distance senses in virtue of the sensitive faculty, whereas others do not. At this stage, I shall argue that locomotive animals have the additional senses because the sensitive faculty is teleologically determined by the fact that it is subsumed under the locomotive faculty. Having argued this way, we shall see more clearly why Aristotle's introduction of the appetitive faculty as the source of motion in *DA* III. 9-10 should not be understood as it appears (see question (5) above).

Chapter IV turns to examine the involvement of *phantasia* in animal locomotion. Nussbaum characterises the role of *phantasia* as recognising an object as an object of some sort and claims that *phantasia* is always necessary in the arousal of locomotion.[19] In this way, she argues that the necessary capacities for animal locomotion are sense-perception (or thought), *phantasia*, and *orexis*. However, I shall argue that *phantasia* is not an absolutely necessary capacity for animal locomotion. In doing this, I shall show (i) that Aristotle ascribes to *phantasia* the role of recognising an object not simply as a thing of some sort, but as a thing of pleasure or pain, and (ii) that an analysis of Aristotle's account of *smell* suggests that he also ascribes that role to sense-perception and, possibly, to thought both of which do not involve *phantasia* in the arousal of *orexis* which is the proximate reason for locomotion.

Having examined the psychological side of animal locomotion, in Chapter V, I shall consider its physiological side with reference to the conception of the *sumphuton pneuma*. This conception is difficult to be dogmatic about because Aristotle does not discuss it thoroughly for its own sake. Nonetheless, there appears to be no doubt that Aristotle thinks

[19] Nussbaum (1978), Essay 5.

that it is a material or physiological substance that exists only in the living being. I shall attend to three facts: firstly, in the *MA*, he introduces the conception of *pneuma* in distinguishing animal locomotion from the locomotion of an artefact, i.e. the puppet (701b 10 ff.). And, secondly, he tries to establish its special status in relation to *orexis* (703a 4-6). Finally, in his biological works (esp. the *GA* and the *PA*) he employs the conception of *pneuma* in explaining not only living activities such as reproduction, digestion, sense-perception, locomotion, etc., but also the composition of different bodily parts, different animals, etc. On close examination of these points, I shall argue that Aristotle's use of *pneuma* demonstrates an essential connection between soul and body; that is, the animal's capacity for various kinds of psychological or living activities necessitates this particular physiological substance, *pneuma*.[20]

In this way, I take Aristotle to maintain that the actualisation of a particular type of a psychological capacity always involves a change of a particular type of a physiological substance. For instance, he believes, as I shall argue, that the feeling of pleasure or pain always involves the heating or chilling of *pneuma* in the heart. Thus it might well be suggested that Aristotle commits himself to the type-type identity theory. If so, he also appears to commit himself to material reductionism, viz. the view that the occurrence of psychological phenomena can be explained in terms of the occurrence of the relevant material changes, namely, the former are reducible to the latter. In contrast to this suggestion, I shall conclude Chapter V by showing that Aristotle's account of animal locomotion clearly shows that he is commited neither to the type-type identity theory nor to material reductionism.

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[20] This need be claimed with qualification since, as we shall see in Ch. V, Aristotle appears to acknowledge that dead animals appear to have this substance, though insufficient for them to be alive and to be capable of their supposed activities.

CHAPTER I

THE PROBLEM OF THE SELF-MOVER

If we are asked what a self-mover is, we might define it as an agent that is responsible for motion that is initiated by the subject itself without necessarily requiring any external mover. If so, Aristotle's characterisation does not appear to be different from ours since he also regards a self-mover as a mover that moves by itself by means of having the source of motion in itself and that is not moved by anything external (e.g. *Ph.* 241b 24 ff.). And yet his discussion of self-motion in *Ph.* VIII soon emerges as a *problem* for us in several respects. The problem begins with the question whether he ever acknowledges the existence of the self-mover. Furley summarises it as follows:

> Aristotle sometimes calls animals self-movers. We must try to determine what exactly he means by this. In particular, we must look at this thesis in the light of certain passages in the *Physics* which appear to deny that there can be self-movers. Is this apparent anomaly to be explained genetically? Are we to believe that Aristotle criticized and rejected his earlier thesis that animals are self-movers? Or is his position as a whole consistent? How then are we to explain away the apparent anomaly?[21]

Furley has in mind the two passages at *Ph.* VIII. 2, 253a 11-20 and 6, 259b 6-17 where Aristotle *appears* to deny the possibility of self-motion.[22] However, there is a difficulty in saying with confidence in the light only of these two passages that "he denies self-motion". The difficulty is not only that he, on many other occasions, appears to assert the existence of the self-mover or its capacity for self-motion, but also that even in the two passages his position is not very clear. In the former passage, Aristotle asserts locomotion as the only type of self-motion living beings are capable of, whereas in the latter he makes the same sort

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[21] Furley (1978), p. 55.

[22] These two passages are cited and discussed in detail in Ch. II. Sec. 2 (*c*) below.

of claim, but adds a qualification by saying that even locomotion 'is not strictly (κυρίως) originated' by living beings. These remarks are indeed ambiguous enough to lead one to doubt that Aristotle ever really acknowledges the possibility of self-motion. On the other hand, if 'locomotion is not strictly self-motion,' what does he mean that it is self-motion in a non-strict sense? What is then the criterion of being strict and non-strict? Aristotle appears to think that he has given satisfactory answers to those questions. Thus we should try to determine what his answers are and see whether they are sound or not.

The primary question is whether Aristotle maintains a consistent theory of the self-mover. I argue below that he does. In what follows, I shall be chiefly concerned with three questions. In Section 1, I shall ask (i) why Aristotle feels it necessary to introduce the question of the existence of the self-mover and (ii) whether he can maintain the existence of the self-mover without rejecting the definition of nature, i.e. the principle of change and rest, ascribed not only to living beings (plants and animals), but to all natural beings including non-living beings, i.e. the simple bodies (earth, fire, air, water). Section 2 deals in detail with the question (iii) in what way he accounts for self-motion. The last question involves an overall enquiry into Aristotle's characterisation of the living being as divisible into two inner parts, i.e. the unmoved moving part and the moved part. I shall focus on examining their relation to each other and, also, to the external world. Having done so, we shall also see that Aristotle ascribes the capacity for self-motion not only to animals, but to all living beings,[23] which entails that he acknowledges not only locomotion, but also other types of change, e.g. qualitative motion, quantitative motion, etc. as self-motion.

[23] Furley's statement cited above gives the misleading impression that Aristotle's self-motion is concerned only with animals.

I. 1 *Natural Motion and Self-Motion*

A proper way of approaching the problem of the self-mover is to ask why Aristotle is concerned with the conception in the first instance. Why does he not simply accept it as a fact that there are such beings that move by themselves? In what follows, I shall begin by explaining Aristotle's position concerning the observation of such beings. Sub-section (*b*) concerns the motion of the simple bodies. In *Ph.* II. 1, Aristotle says that all natural beings (i.e. animals and their parts, plants, and the four simple bodies) have within themselves natures defined as internal sources of motion and rest (192b 9-16).[24] If so, it seems that all of them are capable of their own motion and that they can be legitimately called self-movers.[25] However, this is explicitly denied at 255a 3 ff. Aristotle differentiates the motion of the simple bodies from that of living beings and calls the latter type of motion self-motion. Does it follow that he is now denying the presence of natures in the simple bodies? I shall argue that he is not.

(*a*) *The Emergence of the Problem of Self-Motion*

In order to understand why self-motion emerges as a problem for Aristotle, we have to understand the three interrelated principles that Aristotle tries to establish in *Ph.* VIII, (P_1) that motion must be eternal (250b 10 ff.), (P_2) that everything that moves must be moved by something else or that there cannot be any motion *ex nihilo*,[26] and (P_3) that there must be a first unmoved mover in the universe (258b 10 ff.; cf. 242a 50 ff.).

Aristotle begins the *Physics* by stating that it is an enquiry into the primary reasons (αἴτια) and the principles (ἀρχαὶ) of the things that are subject to change (184a 10-16;

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[24] Aristotle in *DC* III. 1, 298a 26-31 adds the parts of plants, the heaven and its parts to the class of natural beings.

[25] Furley (1978), p. 55.

[26] I.e. Motion that starts 'out of nothing' or, rather, 'without being moved by anything'. See 259b 1-16; cf. 191a 23-31; *GC* 317b 11-18. References are due to Gill (1991, p. 244).

184b 27-185a 4).[27] His theory of change, thus embarked on, reaches its culmination in Book VIII where he endeavours to prove the eternity of motion and the existence of the first unmoved mover which was the primary reason for the eternal motion.[28] In ch. 1 of the Book, Aristotle argues for principle (P_1) in the respects of becoming, ceasing, and time. For instance, he argues that there cannot be a beginning of the first motion because, if there were, then there would be *something* that is responsible for the beginning of the first motion (251a 10-b 10). And this 'something' also requires 'something else' for its motion. Thus, since the first being cannot be first but requires other beings prior to it in order to initiate its motion, there cannot be a beginning of motion. The cessation of motion is denied on similar grounds (251b 29-252a 6). It is to be noted that the denial of the possibility of the beginning and the cessation of motion is based on principle (P_2) that everything that moves must be moved by something else. That denial is thus derived from theoretical reflections rather than sensory observations.

However, the problem of the motion of natural beings is derived from sensory observations. Aristotle observes the upward motion of fire, the locomotion of the animal, etc. that do not appear to require any external movers. At this stage, if their motions are really as they appear to be, then (P_2) does not stand and, also, (P_1) which claims the eternity of motion loses its ground. Thus for Aristotle, those principles appear incompatible with the observation of the motion of natural beings. If he wants to maintain that the principles must be applicable to the structure of the universe as a whole, he has to find a way to explain the motions of natural beings without violating them. Aristotle cannot leave the observation of such motions as an exceptional case, since he accepts 'the small world

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[27] As is generally noted, Aristotle distinguishes κίνησις that includes non-substantial change (i.e. qualitative motion, quantitative motion, and locomotion) from μεταβολή that includes non-substantial change as well as substantial change (i.e. generation and destruction) (see esp. *Ph.* 200b 26-201a 9). See Ross (1936), pp. 7-8, 45-7; Waterlow (1982), pp. 93-158.

[28] Ross (1936), p. 85.

hypothesis' or 'the micro-macro analogy' (as one might call it), viz. the hypothesis that what is true of a small world, i.e. a living being, could also be true of the universe as a whole (252b 25-29; cf. 252a 29-30).[29] That is, he is convinced that if there were beings, as it appears, that are capable of starting their change without being moved by anything external, then it would be also possible that all the beings in the physical world as a whole including the heavenly bodies move themselves spontaneously without requiring any external movers. If this is so, then there might be a time when there is no change and so the eternity of change is not guaranteed. Thus the problem of self-motion in Aristotle initially derives from his attempt to reconcile the conflict between the need for the establishment of principles (P_1) and (P_2) with the observation of beings that appear to initiate their motion without requiring any external mover. The conflict is thus between theoretical reflections and sensory observations.

Aristotle's effort to reconcile that conflict can be first found in VIII. 2 where he considers three possible objections to principle (P_1), two of which are based on sensory observations.[30] He states that among them the observation of the motion of living beings presents the most difficult problem (μάλιστα δ' ἀπορίαν) (253a 8-9). The imaginary opponent argues that there are some beings that appear to start their motion from a state of absolute rest without being moved by anything from without (252b 18-28; 253a 8-11). In reply to this objection, Aristotle does concede that some beings *appear* to move themselves but goes on to claim that such an observation is mistaken since some part of their organism is always in motion, the *aition* of which might be the environment (253a 11-13). In

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[29] Aristotle in *Ph.* VIII. 1 acknowledges that the idea of the application of this hypothesis is due to Empedocles (252a 28-30). However, he warns us that it is a mistake to think that this kind of application is 'always' right (252a 32-b 5). And yet he does not provide us with the criteria to distinguish the right application from the wrong one. His acceptance of the hypothesis is also prevalent, in particular, in the *MA* (cf. 698a 8-14; b 8-15; 699a 22-27).

[30] In postulating the first objection (252b 10-12), Aristotle assumes that his earlier claim made in V. 1 that change is from something to something (225a 1 ff.) is accepted by his opponents.

claiming this, Aristotle denies the existence of self-motion by appealing to sensory observations. It is unclear what part he is referring to. But he hardly seems to have any doubt that the motion of the part is observable (ὁρῶμεν) and that its motion is related to the environment. This argument appears to be on a par with principle (P_2) that everything that moves is moved 'by something (ὑπό τινος)' (241b 34-242a 49), which denies the existence of beings that start their motion *ex nihilo*. However, if there is such a bodily part that is always in motion in relation to the environment, then it seems that the existence of the self-mover is completely denied. And if the existence of such a bodily part can be proved, it appears that Aristotle no longer needs to be concerned with the conception of the self-mover.

However, Aristotle turns to analyse the internal parts of the beings which seem to be different from the observable part discussed above. Aristotle explains the motion of living beings in terms of two internal parts, one moving and the other being moved, as is the case in a man's pushing a chair. Thus 'by something' in principle (P_2) that 'everything that is in motion must be moved by something' now entails either 'by something external' or 'by something internal' (241b 34-242a 49; 259a 30-31).[31] At this stage, we need to note Aristotle's method of natural science suggested in I. 1 of the *Physics*. He there says that the enquiry into natural beings should start from what is more knowable to us and progress to what is more knowable by nature (184a 17 ff.).[32] And yet, he maintains that although sensory observation is no doubt a starting point when establishing a principle, it is not a

[31] Aristotle makes this point more explicitly at VIII. 4, 255b 32-256a 3 and, thereby, claims the principle to be true. Cf. Waterlow (1982), p. 205. On the other hand, Aristotle also leaves room for this way of interpretation in the α version of VII, but not in the β version. The α version (242a 47) says that everything that is in motion must be moved 'by something,' whereas the β version (242a 13) explicitly says 'by something other than itself'. Thus the β version excludes the possibility of interpreting it as entailing 'by a moving part of itself'. Cf. Olshewsky (1995), pp. 391-392; Wardy (1990), p. 94.

[32] Cf. 184a 14 ff.; 185a 12-14; 253a 32-b 6. For a detailed discussion of Aristotle's dialectical method, see e.g. Hussey (1993), ix f.; Wardy (1990), p. 83 f.

sufficient ground for establishing a principle (*arche*) without also involving theoretical reflection. In this vein, he, in *Ph.* VIII, often emphasises the significance of sensory observation as a starting point of the enquiry into self-motion.[33] However, when Aristotle analyses the internal parts of the living organism as one moving and the other being moved, his starting point is not based on the direct observation of such parts, but on the observation of some beings that appear to move without an external mover. Based on the observation of such beings, he begins to make an enquiry into how their motion can be explained within the structure of the universe as a whole. Again, the inner divisibility of such beings at 257a 32 ff. is, as we shall see more closely at a later stage, not the divisibility of bodily parts that are immediately observable to our senses; but it is rather a conceptual divisibility.

We have seen two ways in which Aristotle deals with the observation of self-motion. (1) He denied the imaginary opponents' claim of self-motion as based on mistaken sensory observations. In doing this, his ground was also the sensory observation of a bodily part that is always in motion. On the other hand, (2) he also denied the claim by analysing the internal parts of the living organism. However, this analysis was conceptual in the sense that it did not derive from observation, but from the application of principle (P_2), which entails the agent-patient relationship, to the living organism itself. We can perhaps make an analogy of (1) with a puppet whose inner mechanism is transparent. In such a puppet, when the first central string is pulled by the external operator, we can observe the inner components and connections that produce the eventual motion and explain how the motion is produced. In contrast, in the case of (2) its inner mechanism is opaque and we cannot

[33] Aristotle claims that any attempt to prove the existence of change which is apparent to us would be due to human intellectual weakness (253a 32-b 6; cf. 184b 27-185a 3; 185a 12-14; 200b 12-14; 256b 12-13). However, Ross (1936, p. 85) points out, making a reference to VIII. 3, 254a 24-30, that Aristotle is nonetheless not accepting the existence of motion as a hypothesis without any attempt to prove its truth, but that he attempts to prove it by appealing to sense-perception "coupled with the important addition that if it be urged that sense-perception is fallacious, it may be answered that even the occurrence from time to time of these illusions itself implies change in our mental condition".

really explain how the motion of such an organism is produced. There is thus a significant difference between the two.

However, why does Aristotle need this sort of analysis of the internal agent-patient relationship of the parts, if he believes that the existence of the self-mover can be denied by means of the observation of some bodily part that is always in motion? Why does he envisage such different mechanisms in accounting for the same phenomenon, i.e. the motion of living beings? Are we wrong to think that he envisages two different accounts? Does he think (1) or (2), but not both? In order to answer these questions, we need to ask whether the modification of 'by something' as entailing 'by the internal mover' is also reconcilable with the 'small world' hypothesis. In other words, if some beings move themselves by their internal movers, would it not also be true that others may move themselves in that way, namely, that all the beings in the universe may move themselves without necessarily requiring any external mover? This is also an unacceptable consequence for Aristotle. For, if there were any being in motion that does not require an external mover, his argument for the existence of the first mover which he characterises as the ultimate origin of all changes in the universe (259a 3-7) would fail. That is, Aristotle's modification of 'by something' as entailing 'by something internal' is a necessary move for him to locate living beings within the structure of the universe without violating the establishment of his principles. He is compelled to postulate the internal parts of a living organism in order to uphold principles (P_1) concerning the eternity of motion and (P_2) concerning the agent-patient relationship of beings in motion.

However, the internal mover is not a moved mover, but an unmoved mover (258a 7-9). Thus a living being has an internal unmoved moving part and a moved part, and so there is no necessary connection between such a being and the unmoved mover of the universe that

is ultimately responsible for every change (259a 3-7). Aristotle, however, does not wish to acknowledge the existence of such a self-sufficient mover. If the unmoved mover of the self-mover were fully responsible for its own motion, then the existence of the first unmoved mover of the universe he tries to establish, i.e. principle (P_3), would not be an absolutely necessary principle. In consequence, although self-motion is explained in terms of the internal parts, it is still necessary for Aristotle to try to find some connection between the living being and the external mover. He is thus put in the position of having to show that living beings can start their motion without an impulse from without, and, at the same time, that they, nonetheless, have some link with the outer world.

To recapitulate, Aristotle's characterisation of the internal mover in a living being as an unmoved mover dismisses a necessary connection with the outer world. In other words, the living being can be said to be the self-mover since it is responsible for its own motion in virtue of having the unmoved mover as a part. Nonetheless, he is still required to explain its motion within the whole structure of the universe, which implies that the living being is somehow affected by an external mover. In consequence, it appears that Aristotle's conception of self-motion and of the self-mover is not about a self-mover in an unqualified sense, i.e. something that moves *solely* in virtue of itself or its own sources without any stimulus from without. His analysis of the internal parts primarily suggests that he does not regard the motion of living beings as the same as that of others that do not appear to move themselves. Thus, even after the denial of the self-mover on the basis of the sensory observation of a bodily part that is always in motion, Aristotle still describes living beings as those 'that derive their motion from themselves' (e.g. 255a 6 ff.) or 'that move themselves' (e.g. 258a 23). Although I shall frequently emphasise this point wherever necessary,

bearing it in mind will help us understand many problems arising in Aristotle's theory of self-motion.

(*b*) *Is the Motion of the Simple Bodies not Per Se?*

At *Ph.* VII. 1, 241b 35-39, Aristotle makes a contrast between self-movers, that move themselves by means of having their intrinsic source of motion, and moved movers, that are moved by something other than themselves.[34] Reading that passage in relation to Aristotle's introduction of nature defined in *Ph.* II. 1 as the source of motion and rest "in respect of place, or of growth and decrease, or by way of alteration" (192b 12-16), it gives the impression that Aristotle acknowledges all natural beings as self-movers. However, he explicitly denies this in VIII. 4. He there divides natural beings into two types and regards the simple bodies (earth, fire, etc.) as moved movers (254b 20-23) and living beings as self-movers (254b14-17). Aristotle tells us that his division is based on his observation that living beings do not appear to require any external source for their motion from without, whereas the simple bodies appear to do so (252b 13-28). It thus appears that the division between self-movers and moved movers is not that between natural beings and artefacts, but between living beings and non-living beings both of which are classified as natural beings in II. 1. The extension of self-movers is thus narrower than that of natural beings since living beings alone are now said to be self-movers.

If so, we have to ask again whether this division should be taken to suggest that Aristotle denies to the simple bodies motion *per se* in virtue of their natures. In dealing with this question, we have to note that there are two separate issues here: it might mean whether he denies any sort of natures to the simple bodies, i.e. any sort of motion *per se* to

[34] Aristotle's implication of the conception of the self-mover can be also found in VII. 2, 243a12-15, VIII. 2, and VIII. 4-6. Cf. Waterlow (1982), p. 205.

them, or whether he denies to them natures specifically defined as the sources of motion and rest in an active sense. In *Ph.* VIII. 4, Aristotle appears to ascribe motion *per se* to all natural beings including non-living beings (i.e. the simple bodies) (254b 12-32).[35] He explains that the motion of the living being is *per se* when it moves as a whole and its motion is derived from itself. It might suffer motion *per accidens*, depending on 'the kind of motion that it may chance to be suffering and the kind of element of which it is composed' (254b 18-20). On the other hand, Aristotle maintains that the motion of the simple bodies is also either *per se* or *per accidens* (b 21-23; 255a 1 ff.). He offers the light thing (e.g. fire) moving upwards and the heavy thing (e.g. earth) moving downwards as the examples of the motion *per se* of the simple bodies. For him, that something is capable of motion *per accidens* presupposes that it is also capable of motion *per se* (*DC* 300a 24-26). Thus, since the simple bodies are capable of motion *per accidens*, e.g. earth moving upwards and fire moving downwards, they are also capable of motion *per se*.

What is then the motion *per se* and how is it different from a forced motion? Aristotle explains the motion *per se* of the simple bodies as follows:

> So, too, what is of a certain quantity extends itself over a certain space unless something prevents it. The thing in a sense is and in a sense is not moved by one who moves what is obstructing and preventing its motion—e.g. one who pulls away a pillar or one who removes the stone from a wineskin in the water is the accidental cause of motion; and in the same way the rebounding ball is moved not by the wall but by the thrower. So it is clear that in all these cases the thing does not move itself, but it contains within itself the source of motion—not of moving something or of causing motion, but of suffering it. (255b 22-31)

Aristotle here characterises nature as a principle of 'suffering (τοῦ πάσχειν)'. If we take the passage to be his standard characterisation of nature in spite of his account of it in II.

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[35] For Aristotle, not only motion but also rest can be *per se* as well as *per accidens* (*DC* 300a 27-29). For more on this particular topic, see esp. *DC* II. 13, 294b 31 ff.; III. 2.

1,[36] our discussion of the concept of the self-mover will be readily understandable in that the self-mover is that which moves itself, whereas the simple bodies are moved movers that always require an external mover for their motions. If that was what Aristotle meant, then he would be retreating from what he said earlier in II. 1. If we understand the above passage in this way, then we are forced to regard Aristotle as claiming that there is no difference between the motion *per se* of the simple bodies and their motion *per accidens* since both types of motions are initiated by something external. Is this true? I think not. If it is true, it then seems to follow that his ascription of natures to the simple bodies must be denied. As we shall see below, Aristotle obviously distinguishes motion *per se* in virtue of nature from motion *per accidens* without it and identifies a forced motion with the latter, but not with the former.

Waterlow points out that the distinction between natural motion[37] and self-motion in Aristotle is subject to the problem "of showing how even in their natural motions the simple bodies can be properly described as moved by something".[38] This is a problem for Aristotle because, as noted, he has to explain their motion without threatening principle (P_2) that no motion starts *ex nihilo*. Thus Waterlow dismisses the active motion of the simple bodies and says that their motion *per se* "is 'moved by' those external substances responsible for the motion either through having produced the body in the first place or through removing hindrances".[39] Aristotle thinks that since the simple bodies are naturally unified and

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[36] Commentators differ in translating κινεῖσθαι in the passage "ὡς οὔσης τῆς φύσεως ἀρχῆς τινος καὶ αἰτίος τοῦ κινεῖσθαι καὶ ἠρεμεῖν ἐν ᾧ ὑπάρχει πρώτως καθ' αὑτὸ καὶ μὴ κατὰ συμβεβηκός" (192b 21-23). For example, Charlton (1970, p. 23) and Waterlow (1982, p. 2) translate it as middle (with an active sense), whereas Apostle (1969), Wicksteed and Cornford (1957), and Hardie and Gaye (Oxford Translation) as passive. For a discussion of the potential influence of different translations on the *Ph.* arguments, see Beavers (1988), pp. 357-374.

[37] Here I use 'natural motion' to refer to the motion *per se* of the simple bodies in contrast to self-motion which is the motion *per se* of living beings.

[38] Waterlow (1982), pp. 206-207.

[39] Waterlow (1982), p. 207; cf. pp. 166-168.

continuous, their motion cannot be explained in terms of internal parts (255a 12-18 cited below). Thus if a simple body were to start its motion *ex nihilo*, it would do so as a whole spontaneously. However, if this is the case, principle (P_2) which entails the presence of a mover in every motion will collapse.

Let us return to the *Ph.* passage (255b 22-31) cited earlier. Aristotle there introduces the obstacle-remover (hereafter, 'the remover') as a cause of motion. However, as may well be noted, it is not an agent that directly causes a motion. For instance, when a cue strikes a snooker ball, the cue brings about the motion of the ball and it is a direct cause of the motion. However, when a man removes a block which prevents the ball from rolling, he is a cause in a different sense. On the other hand, when the ball is struck by the cue, it is moved without reference to the nature of the ball. The point here is that when the ball is left alone on a table, it does not move itself. In effect, Aristotle would say that the ball does not have a nature *qua* itself except for the natures of its components *qua* the simple bodies.[40]

However, the simple bodies are different. For instance, when fire is left alone without any interference, it tends to move upwards. Thus, even if the remover removes an obstacle, this does not explain why fire moves in a certain direction as it does. Moreover, such a remover is not always necessary for the upward motion of fire since its motion is not obstructed 'always or for the most part'.[41] The remover is thus accidentally (κατὰ συμβεβηκός) responsible for the motion of fire. The role of the remover is strictly limited to removing the obstacle that interrupts the motion *per se* of the simple bodies; it does not

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[40] Aristotle says in *Ph.* II. 1: "... a bed and a coat and anything else of that sort, *qua* receiving these designations—i.e. in so far as they are products of art—have no innate impulse to change. But in so far as they happen to be composed of stone or of earth or of a mixture of the two, they *do* have such an impulse ..." (192b 16-23).

[41] For Aristotle's discussion of 'always or for the most part' as a condition for being an *aition*, see 197a 19 ff.

directly bring about their motion. It then appears that the simple bodies do have some active source of their motion within themselves. In effect, Aristotle repeatedly remarks in VIII. 4 that when there is no obstacle, they will actualise their motion.[42] In other words, were they not capable of a certain motion by themselves, they would remain still even when an obstacle has been removed. In brief, the obstacle remover does explain the motion of the simple bodies under certain circumstances when there are obstacles. For if there is no such remover of the obstacles, the simple bodies are not able to move. However, it does not explain their motion *per se* after obstacles are removed or when there are no obstacles at all. Aristotle is thus hesitant about calling the remover a mover of the simple bodies. He thus says that "The thing in a sense is and in a sense is not moved by one who moves what is obstructing and preventing its motion" (255b 23-24).[43] If so, Aristotle's statement in the passage cited earlier that "in all these cases the thing does not move itself, but it contains within itself the source of motion ... of suffering it" must not be understood simply as referring to the passive source. The motion of the simple bodies is certainly different from that of a ball. The simple bodies do seem to have a source of active motion, not merely passive motion.

The following analysis of the cases where there are no obstacles shows how Aristotle explains the existence of the external mover without denying the motion *per se* of the simple bodies. In the *De Caelo*, he writes,

> For if the various elements are constrained by one another to move as they do, each must still have a natural movement which the constrained contravenes, and the prime mover must cause motion not by constraint but naturally. If there is no ultimate natural cause of movement and each preceding term in the series is always moved by constraint, we shall have an infinite process. ... Their movement must have been due either to constraint or to their nature. And if their movement was natural, careful consideration shows that there was

[42] *Ph.* 255b 5-6; b 10-11; b 21-25; 255b 36-256a 3.

[43] ὁ δὲ τὸ ὑφιστάμενον καὶ κωλῦον κινήσας ἔστι μὲν ὡς κινεῖ ἔστι δ' ὡς οὔ ...

already a world. For the prime mover must cause motion in virtue of its own natural movement, and the other bodies, moving without constraint, as they came to rest in their proper places, would fall into the order in which they now stand, the heavy bodies moving towards the centre and the light bodies away from it. But that is the order of their distribution in our world. (300b 11-25)

Aristotle here takes it for granted that, for instance, fire moving away from the centre and earth moving towards it are moving in virtue of their own natures. And yet he is saying that such motions are in harmony with the motion that the prime, or first, mover imparts. That is, the prime mover does not impart any sort of foreign motion to the simple bodies, but only the motion which is *per se* to them. Aristotle is then saying that nature is not merely passive, but active to some extent, that is to say, when an appropriate motion is imparted by the first mover, the simple bodies actualise their motion according to the natures they possess.[44] The simple bodies as a whole move in virtue of their natures in accordance with 'the order of their distribution in our world'. This phrase is obscure on its own. However, it is clear that by motion *per se* Aristotle does not mean motion that is completely exempt from any relation to the external mover. As mentioned, it is plain that, were they not to have any active source of motion within themselves, they would not move even when an obstacle is removed. Similarly, if they had no natures as active sources, the motion imparted to them by the first mover would be motion *per accidens*. However, there is no doubt that Aristotle acknowledges motion *per se* of the simple bodies (e.g. *DC* 227b 1-2).

But since a source of movement within the thing itself is its nature, while a force is a source of movement in something other than it or in itself *qua* other, and since movement is always due either to nature or to constraint, (1) movement which is natural, as downward movement is to a stone, will be merely accelerated

[44] Cohen claims that "An intrinsic principle, according to Aristotle, need not be a principle of motion or change; it can be a principle of rest or stasis" (1996, p. 42. See pp. 37-54). His claim soon confronts an objection since Aristotle maintains that what is true of motion is also applicable to the state of rest; that is, since the motion of the simple bodies is either *per se* or *per accidens*, their state of rest can also be *per se* or *per accidens* (*DC* 300a 27-29).

by an external force, while (2) an unnatural movement will be due to the force alone. (301b 17-25. Numbers and underlines are mine.)

In this passage, Aristotle clearly states that motion *per se* of the simple bodies is not without any relation to the external mover. In effect, in (1) he is saying that the motion *per se* of earth, for instance, is due to its source of downward motion in itself and an external mover is that which aids its motion. That is, Aristotle does not think that the inner nature and the external mover are exclusive, but complementary to each other (301b 28-29). In contrast, he says in (2) that if the external mover brings about a motion by its force without reference to what is moved, then it is motion *per accidens*.

As indicated, Aristotle's account of the motion of the simple bodies in terms of their natures is not to say that they are capable of their own motion without reference to any external mover: he allows that there is some external mover which affects their motion in accordance with the natures inherent in them. However, for Aristotle the external mover is not some violent force that moves the simple bodies which are purely static, but some sort of aid that *accelerates* the actualisation of their natures. As noted, he needs to explain natural motion within the structure of the universe as a whole (300b 25). That is, natural motion must also be explained without violating the principles that are applicable to all the constituents of the whole universe. For this reason, Aristotle tries to relate the motion *per se* of the simple bodies to the first mover. At *Ph.* VIII. 4, 255a 3-6, he states that, when the simple bodies suffer motion *per accidens*, it is evident whence the motion is derived, but, he goes on to say, it is not so in the case of their motion *per se*. The obstacle-remover might well be taken to be included in that category where the involvement of a mover is evident. However, motion *per se* of the simple bodies is the case where the cause of the motion is obscure. In other words, it is obscure in what way the first mover would 'aid' or

'accelerate' natural motion. Nonetheless, it is, as Aristotle would say, absurd to dismiss the involvement of a mover on the ground that it is not evident what exactly it is and how it is involved in motion (cf. 241b 40-43).

At *Met.* V. 12, 1019a 20-23 and 1019b 35-1020a 6, Aristotle introduces the *dunamis* as a source of motion (i.e. the active *dunamis*) and the *dunamis* for suffering (i.e. the passive *dunamis*) (cf. 1046a 19 ff.).[45] Thus for him the agent-patient relationship is explained in terms of the active *dunamis*-passive *dunamis* relationship. As mentioned in relation to the principle of 'no motion *ex nihilo*', Aristotle wants to establish that the agent-patient relationship is applicable to every motion without exception. If so, A is moved by B, B by C, C by D, and so on continually. Aristotle, however, rejects such an infinite series of motions and brings in the conception of the first mover (e.g. *Ph.* 242a 50 ff.). In effect, when the first mover is defined as the unmoved mover, it emerges as an exceptional or special case of an agent or an active *dunamis* in it since the unmoved mover is by definition not moved by anything else. Moreover, when such an agent is related to a patient, their relationship is different from that in other cases. That is, although it is a mover, it does not literally move the patient by moving itself, but moves it by being unmoved. When we talk about the role of the unmoved mover in this way, the patient has to have a certain source (*dunamis*) of active motion. As Gill says, "an active δύναμις determines the proper ordering of motions but cannot, as an unmoved mover, introduce new forces into a causal chain, whether by initiating a causal sequence or by imposing physical constraints."[46] For, if it introduced a new force, then there would be a prior force to it and so on *ad infinitum* (see 251a 10-21).

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[45] Gill (1991), esp. pp. 246-254.
[46] Gill (1991), pp. 251-252; cf. Solmsen (1960), p. 234.

In talking about the relation between the first mover and the simple bodies in this way, we are indeed forced to define natures as the sources of motion in a passive sense, for the first mover is, according to Aristotle, that which is responsible for all motions in the universe. There must be an external agent that provides certain conditions or removes obstacles for the patient to be able to exercise its own *dunamis*. However, as mentioned, although the *dunamis* in the simple bodies is not powerful enough to trigger its own motion by removing all the obstacles it confronts, Aristotle clearly and repeatedly says that when all the conditions are provided and when there is no obstacle, the natures of the simple bodies tend to actualise themselves. Thus the motion *per se* of the simple bodies is different from forced motion as in the case of a chair being moved by a man, in which there is no room for taking account of the active source of motion, if any, in the chair other than the source in the man.

Aristotle envisages a clear difference between forced motion and motion *per se*. As seen in the *DC* passage cited above (301b 17-25), he thinks that motion *per accidens* is the motion initiated by the external mover alone, whereas motion *per se* is the result of the relation between the source of the patient and the external mover. The motion *per se* of the simple bodies belongs to the latter category. If they had no natures, they would not be able to move in the way they do. If they were moved by the first mover without any involvement of their inner natures, then their motions would be forced motions. The point is that in the case of forced motion the external mover is a sufficient condition for bringing about the motion, whereas, in the case of the motion of the simple bodies, the external mover and the nature of the simple bodies are jointly sufficient, but separately insufficient. We might now conclude that Aristotle's characterisation of the simple bodies as moved movers differentiated from self-movers is not meant to deny that they are capable of motion

per se by means of having natures within themselves. As we shall presently see, the distinction is rather based on whether they have internal parts or not. The simple bodies do not have such an inner structure and so they are distinguished from self-movers. What is to be noted here is that Aristotle does not deny that motion *per se* of the simple bodies is observable (cf. *DC* 304b 25-28) nor that they have natures as principles of their motion. He is now retreating from describing their natures as the sources of spontaneous motion having no relation to the first mover. The motion *per se* of the simple bodies is not quite 'active' if the term entails the capacity for self-initiated motion. Nonetheless, it is clearly different from a purely passive or forced motion (which now turns out to be motion *per accidens*).

However, for Aristotle all natural beings are constituents of the universe. Thus both natural motion and self-motion must be explained in relation to the first ultimate mover of the universe. Granting that the involvement of the first mover in the two types of motion is not directly observable, they would appear to be self-initiated motions which are clearly different from forced motions, i.e. motions *per accidens*.[47] If so, why does Aristotle need to ascribe internal parts to living beings? Why does he not simply say that all seeming self-motion is, as a matter of fact, forced motion in relation to the first mover? The motive is clear: he wants to distinguish the motion of the simple bodies from the motion of living beings. Aristotle seems to note the fact that, even if earth has the nature to move downwards, when it lies on the surface, it is not capable of actualising its nature, whereas the animal is (cf. *Ph.* 253b 33-36). If this line of interpretation is right, then Aristotle would need to try to distinguish the natural mover from the self-mover, not on the basis that one

[47] However, in accounting for the motion *per se* of the simple bodies, Aristotle cannot exclude its relation to the first mover. For, if he did, then he would have to deny principle (ii) about the necessity of the agent-patient relationship in every motion. However, at *MA* 700b 11 ff. he says that "if we exclude the motion of the universe, living creatures are responsible for the motion of everything else". The reason for his treatment of living creatures as the cause of motion without reference to the first mover of the universe is related to their possession of the internal unmoved mover, which we shall examine in Sec. 2 (*b*).

appears to move itself and the other not (which denies nature to one mover), but that one has a limited capacity to move, whereas the other has a wider range of capacities to move (which allows natures to both movers). Indeed, he embarks on the matter in *Ph.* VIII. 4 by ascribing the capacity for motion *per se* in one direction to the natural mover and the capacity for motion *per se* in two directions to the self-mover.

(*c*) *The Distinction between Natural Movers and Self-Movers*

Let us now turn to ask what criteria Aristotle has in mind in distinguishing the natural mover from the self-mover. In *Ph.* VIII. 4, he says,

> It is impossible to say that their motion is derived from themselves: this is a characteristic of life and peculiar to living things. Further, if it were, it would have been in their power to stop themselves (I mean that if e.g. a thing can cause itself to walk it can also cause itself not to walk), and so, if fire itself possesses the power of upward locomotion, it is clear that it should also possess the power of downward locomotion. Moreover if things move themselves, it would be unreasonable to suppose that in only one kind of motion is their motion derived from themselves. Again, how can anything continuous and naturally unified move itself? In so far as a thing is one and continuous not merely in virtue of contact, it is impassive: it is only in so far as a thing is divided that one part of it is by nature active and another passive. Therefore none of these things move themselves (for they are naturally unified), nor does anything else that is continuous: in each case the mover must be separate from the moved, as we see to be the case with inanimate things when an animate thing moves them. (255a 6-18)

Aristotle here characterises self-movers (those that derive their motion from themselves) as those (i) that are alive, (ii) that are capable of, say, two-way motion, and (iii) that are not continuous, but divisible into the moving part and the moved part. In explaining two-way motion, Aristotle makes two contrasts (1) between the power to initiate motion and the power to arrest it[48] and (2) between the powers to move in opposite directions.[49] In this

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[48] Since, as noted, Aristotle in *Ph.* II. 1 says that all natural beings have natures as the sources of 'motion and rest', it might appear that (1) is not a peculiar characteristic of living beings. He does not seem to be interested in making an explicit distinction between the source of rest in the living being and that of the

way, the natures of the simple bodies are said to be the capacities to produce one-way motion,[50] whereas the capacity for two-way motion is described as the characteristic of living beings. Since life belongs only to those beings that have souls (*DA* 402a 5-7), Aristotle is saying that only living beings are capable of two-way motion (cf. 412b 16-17).

What is it about the soul that makes its possessors so special? Is soul different from nature? According to Aristotle, nature is neither a subject nor a substance, but always requires a subject in which it inheres (*Ph.* 192b 32-34). And it is not an accidental attribute such as a shape or a quality (192b 35-193a 2; cf. 194a 34-b 8).[51] Thus nature cannot be explained in terms of contraries such as privation and form (cf. 190b 24 ff.) for it is not something that may or may not belong to a subject. Aristotle, however, does call it 'form' in so far as it is an object of definition. He says, "What is potentially flesh or bone has not yet its own nature, and does not exist by nature, until it receives the form specified in the definition, which we name in defining what flesh or bone is" (193a 36-b 2). Thus nature is the form in the sense of essence by which we determine what a thing is (cf. *Met.* 1029b 11-16; 1030a 18-27). In starting the study of the soul in the *DA*, Aristotle clearly states that it is an extension of the work on nature (402a 5-7; cf. 412a 12-16). The soul is that in virtue of which a living being is capable of living and, also, of exercising various living activities in order to maintain its life (413a 21 ff.). The soul of a living being is thus its nature in the sense of form or essence (412a 6 ff.). Therefore Aristotle's distinction between the simple

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simple bodies. However, he is presumably thinking that the living being has a power to stop its motion prematurely before it fulfils its end, e.g. an animal's stopping eating before it satisfies its hunger, whereas the motion of the simple bodies comes to an end only when it reaches a natural place (cf. *DC* 295b 19 ff.). I shall not discuss this matter in detail. Cf. Gill (1991), pp. 243-257.

[49] It is to be noted that Aristotle is here concerned chiefly with locomotion. However, considering that he ascribes to living beings other types of motion of which they are capable in virtue of the soul (406a 12-14; 415b 22-27), it is unreasonable to assume at the outset that he considers locomotion as the only self-motion (cf. *Met.* 1046a 36 ff.). We shall return to this issue at a later stage.

[50] Aristotle, however, maintains that motion *per accidens* of the simple bodies is manifold (300a 24-27).

[51] On Aristotle's distinction between *per se* and *per accidens* attributes, see *Met.* esp. VII. 4 and Witt (1989, pp. 104 ff.).

bodies and the self-mover does not rely on one having nature and the other not, but on their having different natures.

We saw earlier that Aristotle's introduction to the internal divisibility into two parts of living beings appears necessary in order for him to reconcile their motions (that appear to be initiated without any external mover) with the principle of 'no motion *ex nihilo*'. However, this introduction of the internal parts is, in effect, an attempt to distinguish the motion of living beings from that of the simple bodies. That is, the internal divisibility is a necessary condition for one to be called a self-mover and not just a natural mover. Is this also a sufficient condition for the capacity for two-way motion? According to the passage cited above (*Ph.* 255a 6-18), Aristotle seems to think so. As has been shown, one of the reasons he offers for the limited capacity of the simple bodies for one-way motion is that they are naturally unified and continuous and thus they are not divisible into internal parts (*Ph.* 255a 15-18). However, we must ask what this unity is about. Is it a unity of material components? This question arises since we have not yet determined the nature of the internal parts. We shall return to answer this question in Sec. 2 (*a*) below.

I. 2 *The Analysis of the Self-Mover*

It has often been mentioned that Aristotle believes that there is no motion *ex nihilo*. And yet he describes the motion of living beings in terms of their internal parts in order to distinguish it from forced motion and, also, from the motion *per se* of the simple bodies. In this section, we shall see what he means by self-motion and the self-mover by examining in detail the nature of the internal parts of the self-mover and their relation to the external mover.

(*a*) *The Division of the Internal Parts*

Aristotle characterises the self-mover in various ways: it is that which moves itself without being moved by anything else (e.g. *Ph.* 252b 19 ff.), that which derives its motion from itself (e.g. 254b 14-15), or that which contains the source of its motion (e.g. 241b 36-37; *GC* 324a 27). And the opposites are true of the moved, or forced, mover. What makes the difference between the two types of mover is, of course, that the self-mover has the source of its own motion. But, for Aristotle, the self-mover does not spontaneously begin to move just because it has the source of motion within itself, but moves as a result of the agent-patient relationship between its internal parts. He says, "In so far as a thing is one and continuous not merely in virtue of contact, it is impassive; it is only in so far as a thing is divided that one part of it is by nature active and another passive" (*Ph.* 255a 13-15 cited earlier). At one stage, Aristotle claims that every mover moves something 'with itself' or 'with something else', e.g. either a man moves a thing himself or with a stick (256a 22-23). By regarding both the man and the stick as examples of instruments with which the man imparts motion, he characterises the self-mover as a mover that uses itself as an instrument (256b 16-21). In this way, Aristotle concludes that in every motion there are three elements, i.e. the mover, the moved, and the instrument of motion (256b 13-14).

As mentioned earlier, Aristotle accepts the hypothesis that what is true of a living being might be also true of the universe. However, he appears to accept the reverse as well, i.e. what is true of the universe might well be true of a living being (e.g. *MA* 700a 6 ff.; b 13-14). He once states in the *MA* that "if we exclude the motion of the universe, living creatures are responsible for the motion of everything else" (700b 11 ff.). In saying this, he primarily envisages the relation between the first mover, that is responsible for all motion, and all the beings in the sublunary world, that are subject to motion, and, secondly, between

the self-mover and other beings. One might then suppose that Aristotle thinks of the self-mover as a first mover in the sense of an unmoved mover. However, this is not so. Aristotle infers the existence of the unmoved mover by arguing for its necessary involvement in self-motion (*Ph.* 256b 21-25). That is, the self-mover is not the unmoved mover itself, but a mover that contains the unmoved mover in it. According to our discussion so far, it appears that Aristotle has four types of mover in mind, i.e. the unmoved mover, the self-mover, the natural mover, and the moved mover. In effect, both the self-mover and the natural mover are called moved movers in so far as they experience motion *per accidens*. However, unlike the unmoved mover that moves without being moved and the moved mover that moves by being moved (e.g. 256b 15-16), it is not immediately clear how we are to understand the motion *per se* of the self-mover explained in terms of its parts. In *Ph.* VIII. 5, Aristotle writes,

> Therefore when a thing moves itself it is one part of it that is the mover and another part that is moved. But it is not self-moving in the sense that each of the two parts is moved by the other part; the following considerations make this evident. If each of the two parts is to move the other, there will be no first mover; for that which is earlier in the series is more the cause of its being moved than that which comes next, and will be more truly the mover; for we found that there are two kinds of mover, that which is itself moved by something else and that which derives its motion from itself; and that which is further from the thing that is moved is nearer to the principle of motion than that which is intermediate. Again, there is no necessity for the mover to be moved by anything but itself; so it can only be accidentally that the other part moves it in return. I take then the possible case of its not moving it: then there will be a part that is moved and a part that is an unmoved mover. (257b 13-23)

With reference to the nature of the parts of the self-mover, we first need to note that the moved part in the self-mover must be distinguished from the moved mover, i.e. the part that moves something else by being moved. If the moved part were to move something else, then what is moved would be the moving part or something external. However, Aristotle

holds that the moving part is not to be moved by the other part *per se*, but leaves room for its being moved by it *per accidens*. That is, the moved part does not move the moving part in return *per se*. In the above passage, Aristotle explicitly rejects this idea of the internal parts moving each other, for, if that were the case, there would be no first mover.[52] Aristotle thus arrives at the conclusion that the self-mover is composed of the moving part and the moved part which may or may not move the moving part (257b 23; cf. 258a 25-26).

On the other hand, he also seems to maintain that neither of the two parts can have any direct contact with the external object without involving each other. It is undeniable that if either of them is absent in a living being, the living being cannot derive its own motion from itself (258a 27 ff.) and it is no longer a self-mover. In other words, if, in the self-mover composed of AB, either of them were separated from the other, A would not move anything else nor would B be moved by anything else. Thus, in so far as AB's motion is self-motion, the roles of A's moving and B's being moved are strictly between themselves; that is, A's potentiality to move has an internal relation to B's potentiality to be moved. Thus construed, we are entitled to conclude that neither can A in any way move an external object without involving B nor can B be moved by anything external without involving A. It is thus AB as a whole that acts as a mover in relation to other external objects.

Supposing that in a single organism AB divided at C, CB is a moving part and AC a moved mover, the latter will be at rest when the former is not in motion. However, Aristotle's own expression in VII. 1 is that "if CB is not in motion, then AB will not be in motion" (242a 41-42). Ross argues that Aristotle is here making "the mistake of supposing that this implies the causal dependence of the movement of AB on the movement of a part

[52] For a discussion of the necessity of the first mover, see VIII. 5, 256a 4 ff.

of itself CB".[53] That is, if AB is at rest when CB is not in motion, it will also be at rest when AC is not in motion. It is, of course, true that if either of the parts were absent or at rest, the whole AB would not be in motion. However, this does not imply that the moving part CB as well as the moved part AC are individual causes of a self-motion. For, for Aristotle, what is first in the series of self-motion is the first mover, whereas what is last in it is a moved mover which may or may not move the mover in return. In other words, Aristotle thinks that CB is the first mover which imparts motion to AB through AC, but he does not think of the agent-patient relationship in a reversed order. Thus all the responsibility for AB's motion and rest should be ascribed to CB, but not to AC.

In dismissing the possibility of AC as a mover responsible for AB's motion, it is important to note Aristotle's suggestion that what is further away from the thing that is moved is nearer to the principle of motion (257b 16-20). That is, what is earlier in the series of motions is nearer to the principle. In a self-mover AB, CB moves AC and puts the whole AB in motion. And CB is, as Aristotle says, more truly a mover than AC because it is earlier in the series. In the same way, CB's ceasing motion is responsible for AC's rest and also for AB's rest. Again, for Aristotle CB rather than AC is responsible for AB's rest because CB is further away from AB than AC in the series of motions. Moreover, for him the relation between the parts is one-way, i.e. when CB moves AC, there is no necessity that AC moves CB in return.[54] A single organism's parts moving each other does not fit

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[53] Ross (1936), note on 242a 38-49. On the other hand, Wardy (1990, p. 97 ff.) thinks that this is not a problem for Aristotle if we "understand the thesis as modestly claiming that, in anything moved, one can always conceptually differentiate between active and passive factors". By the factors being 'conceptual', he means that they are not "as actual, causally related parts within the moving whole, such as limbs and torso". However, Wardy's claim is not wrong, but that is not the way in which Aristotle settles the problem, as we shall see below. On the other hand, Wardy seems to be confused with the division of the two parts being conceptual and their role being conceptual. For Aristotle, as I shall argue, their division is conceptual, but their role is not. The point is that if their role is also conceptual, then there cannot be a dead body which loses the unmoved mover (i.e. the soul) of the living being. However, Aristotle explicitly acknowledges that there is a dead body that results from a loss of the unmoved mover, i.e. the soul (e.g. *DA* 412b 25 ff.) although he would not call it a body. Cf. The discussion of homonymy principle in Ch. II. Sec. 2 (*a*).

[54] *Ph.* 258a 5-9; cf. 260a 4-5; 267b 2 ff.

into his conception of the self-mover (257b 14-15). In this way, Aristotle is eventually led to the conclusion that the mover in the self-mover is an unmoved mover (257b 23-26). His characterisation of the moving part as unmoved enables him to claim that the mover CB is not moved by AC in return. In consequence, Ross's criticism that in Aristotle's theory of the self-mover the moved part, AC, appears to be also responsible for AB's motion is wrong.

Although Aristotle, in general, speaks as if the division of the internal parts of the self-mover were readily recognisable, he later admits that it is indeed otherwise.

> ... for here the uncertainty is not as to whether the motion is derived from something but as to how we ought to distinguish in the thing between the mover and the moved. It would seem that in animals, just as in ships and things not naturally constituted, that which causes motion is separate from that which suffers motion, and that in this way the animal as a whole causes its own motion. (254b 27-32)

All the information we can gather from this passage is that the self-mover is composed of two parts which bring about its motion by playing different roles, i.e. one moving and the other being moved. Aristotle here does not tell us what the parts are, only that they are. They are not as distinctive as hands and arms conjoined by the wrist[55] and so their relationship is obscure. In effect, in *Ph.* VIII. 5 Aristotle explicitly rejects such an actual division of the parts of the self-mover.

> Perhaps there is nothing to prevent each of the two parts, or at any rate one of them, that which is moved, being *potentially divided though actually undivided*, so that if it is divided it will not continue in the possession of the same nature; and so there is nothing to prevent self-motion residing primarily in things that are potentially divisible. (258b 1-4. Italics are mine.)

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[55] Wardy (1990), p. 97.

Aristotle's objection to the actual division of the internal parts is based on the thought that, if they were, they would "not continue in the possession of the same nature" (258b 3).[56] That is, since the nature of the self-mover is to have a part moving and a part being moved and, also, the capacity for two-way motion, it is plain that if the self-mover is actually divided, either of the parts will not have the same nature as the self-mover as a whole does. Thus it is clear that in talking of the parts of the self-mover, Aristotle does not mean to refer to actually separable parts. Indeed, he thinks that whatever has a magnitude can be divided into parts and so even the simple bodies are divisible (cf. *GC* 327a 10 ff.). Thus, it appears that the divisibility Aristotle has in mind as a criterion distinguishing between the self-mover and the simple bodies is not a material divisibility, but a conceptual, or functional, divisibility. He says that the simple bodies are not capable of two-way motion because they are 'naturally unified' and 'continuous' not merely in virtue of contact (*Ph.* 255a 12-18).[57] The phrase 'not merely in virtue of contact' is to distinguish the simple bodies from artefacts produced by art (*Met.* 1015b 35-1016a 17; cf. 1052a 22-32). Fire, for instance, is 'one' not merely in the sense of contact, but also in the sense of natural unity in virtue of its own nature.

One might ask whether Aristotle envisages that it is difficult to recognise any specific division of the internal parts of the self-mover because their relation is such as a bodily part

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[56] The relevant passage is fully quoted below.

[57] However, it is not immediately clear why Aristotle, at 255a 12-19, talks of the material unity of the simple bodies as one of the conditions that distinguishes them from living beings. It might be because at this stage he envisages the sort of a material complexity of the living organism which he discusses in *PA* II. 1-2 (see also, *Meteo.* IV. 10). He thinks that animals are composed of the homogeneous parts, e.g. blood, flesh, semen etc., as well as the heterogeneous parts, e.g. the eye, the hand, the face etc. that are composed of the homogeneous parts. Thus they are composed of not one, but various simple bodies (*PA* 646a 13 ff.; cf. *GC* 334b 31-335a 22; *Meteo.* 389a 29 ff.). This complexity of the living being in terms of material elements is, however, not directly relevant to the conceptual division of its internal parts since the division is not an actual material division. In the *Ph.* passage (255a 12-19), Aristotle speaks as though the material complexity were what makes the living being different from the simple bodies. However, he elsewhere maintains that the living being has such an complexity because it is different from them. That is, since it has the soul, its material organism is so complex as to perform the activities it is capable of (*Mete.* 389b 23 ff.; *PA* 687a 6 ff.). Cf. Ch. III. Sec. 2 (*c*) and note 202.

being 'distributed' all over the other part. It is undeniable that in such a case it is not possible to discern one from another. Moreover, if the fact that the simple bodies are naturally unified or organised is a reason for their incapacity for self-motion, then living beings, too, must be incapable of self-motion because they are also naturally organised unities. These objections indeed presuppose that the division between parts of the self-mover is material. However, Aristotle's characterisation of the moving part as unmoved excludes the possibility of the part being material because for him everything that has a magnitude is subject to motion. Thus it is once again clear that the division is not a division of material parts.

In *Met.* IX in a discussion of the conception of potentiality, Aristotle says that one and the same thing can have the potentiality to move and the potentiality to be moved (1046a 9-15). However, he distinguishes it from saying that an organic unity can be acted on by itself for the reason that in such a case "it is one not two different things" (1046a 28-29). Since it is not possible for one thing to act and to be acted on at the same time, he goes on to claim that the self-mover must have internal parts (*Ph.* 255a 13-19). For "only in this way is it possible for a thing to be self-moved" (258a 1-3; cf. 254b 27-32 cited above). On the other hand, in *Met.* IX. 2, Aristotle says that some produce a single effect and some produce contrary effects according to their natures, i.e. according to whether they have souls or not (1046a 36-b 28). That is, only some beings that have souls can have both the potentiality to move *qua* other and the potentiality to be moved *qua* other (1046b 15-19). If so, Aristotle is eventually saying that one and the same thing can be *described* as having both active and passive capacities when it is considered from two different aspects, as a man who cures himself can be said to be a doctor or a patient depending on how we see him. In this case, it seems that, although the division of the doctor and the patient is not actual, one and the

same man appears to play active and passive roles. Does Aristotle explain the relation between the unmoved moving part and the moving part in the same way as he explains a man described as a doctor, on the one hand, and a patient, on the other? If so, what he needs is to grant that they are not really *parts* that compose a being, but two different descriptions of one and the same thing. In order to answer the above question, we need further to examine the characteristics of, and the relationships between, the internal parts of the living being.[58]

(*b*) *The First Unmoved Mover of the Self-Mover (SF)*

As noted, the self-mover is said to have an unmoved mover (κινοῦν ἀκίνητον) as a part.[59] At this stage, it is important to note that Aristotle envisages two types of unmoved mover. However, he often switches from one to another without any clear indication of which one he refers to. Thus it is necessary for us to clarify what they are and how they differ. Without this effort, those who are familiar with Aristotle's conception of the eternal unmoved mover, which is the πρῶτον κινοῦν κινεῖ οὐ κινούμενον of the universe, might be puzzled by his introduction of an unmoved mover as perishable in *Ph.* VIII. 6. Such an effort is also necessary for us to grasp the role of the unmoved mover in the self-mover.

Firstly, Aristotle thinks of a first unmoved mover (hereafter, let us call it UF) which is either directly or indirectly responsible for all motions in the universe (259a 3-7). He derives its existence from the assumption that, although everything that is in motion must be moved by something else, the series of motions cannot go on to infinity (242a 50 ff.). The UF is eternal since time and motion are eternal (251a 8 ff.). On the other hand, there is another kind of first unmoved mover which is responsible for the motion of the living being

[58] See also Ch. II and Ch. V. Sec. 2.
[59] *Ph.* 243a 13-15; cf. 257b 13-16; 258a 1-3.

(hereafter, SF). The relevant passage in which Aristotle distinguishes them reads as follows:

> For, since nothing that has no parts can be in motion, everything which moves itself must have magnitude, though nothing that we have said makes this necessarily true of every mover. So the fact that some things become and others perish, and that this is so continuously, cannot be caused by any one of those things that, though they are unmoved, do not always exist; nor again some be caused by some and others by others. The eternity and continuity of the process cannot be caused either by any one of them singly or by the sum of them, because this causal relation must be eternal and necessary, whereas the sum of these movers is infinite and they do not all exist together. (258b 24-32)

The UF is one in number (259a 7-13) and brings about a continuous motion. In contrast, the SFs are many in number and cannot bring about a continuous motion because they do not exist eternally, but come to be and pass away. Being perishable, its motion cannot be continuous but ceases to be at some time (258b 26 ff.), although the motion can presumably be continuous until the SF perishes. Thus when dealing with the SF, we are concerned with a perishable unmoved mover.

Suppose that a self-mover composed of AB somehow moves a non-living being, C, which again moves another non-living being, D, etc. For Aristotle, each of the relations between A and B, between AB and C, between C and D, etc. might be a continuous motion, but the relations as a whole are not continuous since they are not one and the same motion, but many individual, and successive, motions (259a 16-19). On the contrary, the UF can bring about a continuous motion for it is what always exists. This continuous motion of the UF is, according to Aristotle, circular locomotion which is the only motion that can be eternal (260b 29-30). Being circular, there is neither a beginning nor an end for it. However, all other sublunary motions have both a beginning and an end.

First, it may be said that no change is eternal; for the nature of all change is such that it proceeds *from* something *to* something, so that every change must be bounded by the contraries that mark its course, and no motion can go on to infinity. (252b 10-12)

Aristotle believes that since every change is from something to something, i.e. between contraries (see also, esp. 224b 27 ff.), no change can be infinite or continuous in a strict sense (241a 26-b 13). Nonetheless, he does not deny the continuous and eternal motion of the universe (252b 34-253a 2). In effect, he later claims that the UF is an exceptional case in that it continuously imparts motion to the first moved mover which is also eternal (259b 32-260a 5). In contrast, as mentioned, the motion of living beings is continuous only in a limited sense since they are perishable. The motion occurring between the components AB of a self-mover and, also, that between the self-mover and the outer environment are thus continuous in a limited sense because the self-mover is not eternal. The motion of the self-mover is continuous only as long as the self-mover is alive.

However, it is to be noted that Aristotle uses the term 'the unmoved mover' not only for the SF and the UF, but also for others such as the environment.[60] It is plain that the environment is not to be identified with the ultimate unmoved mover, i.e. the UF. The point Aristotle tries to make here might be illustrated from an analogy with the ranks of the army officers. Suppose that there is one general who gives an order to a colonel, the colonel to a major, the major to a captain, and so forth. The difficulty here is that Aristotle sometimes regards the general, the colonel, the major, and so on as first movers. Supposing again that the general is the first mover of the universe, in the absence of the general the colonel is said to be the first mover, in the absence of the general and the colonel the major is the first mover, and so on. In this way, Aristotle calls the UF, the environment, or the moving part

[60] E.g. *DA* 433b 12 ff.; *Ph.* 253a 11-13; 259b 11-13.

of the man with the same name, i.e. the first mover. Strictly speaking, none of them are either first or unmoved except for the UF. In other words, neither the environment nor the moving part is an unmoved mover *simpliciter*, but only in a qualified sense. Indeed, this line of argument enables Aristotle to claim that, although living beings are moved by the environment and eventually by the UF, they are still self-movers in virtue of having SFs within themselves. That is, when we consider only the relation of the inner parts of self-movers, there is the SF as the principle of their motion which imparts motion without being moved by anything. However, this cannot be strictly true when we consider the universe as a whole. Living beings are somehow affected by the environment and, eventually, by the UF.

However, does Aristotle think that we can take any mover out of the movers involved in a series of motions at random and call it the first mover? Let us take Aristotle's example in *Ph.* VIII. 5: a man holding a stick in his hand moves a stone with it (256a 6-7). Can we simply exclude the man and say that his hand is the first mover? Can we also exclude his hand and call the stick the first mover? Would Aristotle accept this kind of random exclusion of the previous movers? If not, what are the criteria Aristotle has in mind? He gives a concise and simple answer to the question. The first mover is by definition that which is not moved by anything else and that which does not need another mover (256a 16-21). And so the series of motions must "be preceded by something else which imparts motion with itself" (256a 29-34). Returning to the above example of army officers, if the colonel, the major, etc. are not capable of giving orders to the troops on their own without having orders from the higher officers, then they cannot play the role of first movers. On the other hand, in the stick example, the man is said to be the first mover since the man moves himself without being moved by anything else.

However, why does Aristotle think that the man rather than the SF of the man is the first mover in a series of motions? It is because, although he objects to the idea that the man moves, and is moved by, himself as a whole without internal parts, he does not thereby reject the thesis that it is the man as such that moves the stick. The man as a whole is a self-mover in virtue of the SF. That is, it is not the SF of the man, but the man as a whole, that is the first mover in the series of motions 'in relation to external objects'. As we saw earlier, the two inner parts of the self-mover cannot have any relationship to the external object without involving each other. That is, neither the moved part nor the moved part alone moves, or is moved by, the external mover. Thus, when the SF moves the moved part, the two parts as a whole act on the external object.[61]

(c) *An Analysis of Ph. VIII. 2, 253a 11-20 and 6, 259b 6-17*

Given the preliminary analysis of Aristotle's account of the parts of the self-mover, let us now turn to examine two important passages which are sometimes considered as his rejection of the existence of the self-mover. By analysing them in detail, I shall argue that Aristotle does not deny self-motion, but acknowledges as self-motion all sorts of motion including locomotion, quantitative motion, and qualitative motion.

As briefly mentioned earlier, Aristotle in *Ph.* VIII. 2 examines some possible objections to the thesis of the eternity of motion which he is endeavouring to establish. The imaginary opponent's claim is based on the observation of animal motion—that the living being appears to start its motion without requiring any external mover. She would go on to argue: "if this can occur in an animal, why should not the same be true also of the universe as a whole? (252b 25 ff.)" If, as she argues, this is also true of the universe, then there is a

[61] This line of analysis of the parts in the self-mover is consistent with with his hylomorphic distinction between soul and body which we shall see in Ch. II.

possibility that the heavenly motion might be spontaneous. There is no doubt that Aristotle accepts that argument as valid. However, he does not want to say that the conclusion is true. For, if he did, he would also have to accept the unhappy consequence that motion *ex nihilo* is possible. Thus, as we saw earlier, what is necessary for Aristotle at this stage is to deny that the animal is a self-mover *simpliciter*. That is, he needs, on the one hand, to ascribe a distinct status to it as a self-mover and, on the other, to allow the contribution of the environment to its motion to some extent. Indeed, this seems to be exactly what Aristotle is doing in the following two passages.[62]

(A)

This, however, is false; for we observe that there is always some part of the animal's organism in motion, and the cause of the motion of this part is not the animal itself, but, it may be, its environment. Moreover, we say that the animal itself originates not all of its motions but its locomotion. So it may well be the case—or rather perhaps it must be the case—that many motions are produced in the body by its environment, and some of these set in motion the intellect or the appetite, and this again then sets the whole animal in motion: this is what happens in sleep: though there is then no perceptive motion in them, there is some motion that causes them to wake up again. (253a 11-20)

Aristotle here rejects the commonly accepted view that living beings start their motion from a state of absolute rest and claims that there is "ἀεί τι κινούμενον ἐν τῷ ζώῳ τῶν συμφύτων", which is caused by the environment. However, he does not say that all motions require the environment as their source. He here appears to allow that locomotion is the only motion that has nothing to do with the environment. Aristotle, however, does not immediately embark on detailed discussion of this matter, but promises to deal with it on a later occasion (253a 20-21). This promise is kept in *Ph.* VIII. 6.

[62] I acknowledge that I have adopted Furley's method (1978) in referring to the two passages under discussion as (A) and (B).

(B)

We must grasp the fact, therefore, that animals move themselves only with one kind of motion, and that this is not strictly originated by them. The cause of it is not derived from the animal itself: there are other natural motions in animals, which they do not experience through their own instrumentality, e.g. increase, decrease, and respiration: these are experienced by every animal while it is at rest and not in motion in respect of the motion set up by its own agency; here the motion is caused by the environment and by many things that enter into the animal: thus in some cases the cause is nourishment—when it is being digested animals sleep, and when it is being distributed they awake and move themselves, the first principle of this motion being thus originally derived from outside. Therefore animals are not always in continuous motion by their own agency: it is something else that moves them, itself being in motion and changing as it comes into relation with each several thing that moves itself. (259b 6-17)

Aristotle's position in this passage is obscure: at first, he seems to acknowledge that locomotion is self-motion, but he soon denies it by saying that it is not 'strictly (κυρίως)' originated by the animal (261a 23-24; *DA* 410b 20-21). However, why does he not simply say that all motions are somehow affected by the environment, but distinguish locomotion from other types of motion? What does he mean by the qualification 'strictly'? In order to decide whether we are to accept the above remarks as a denial of self-motion, we thus need to ask why he feels it necessary to distinguish locomotion from increase, decrease, and respiration (cf. 432b 9-14).

Aristotle in (B) says that increase, decrease, and respiration are not produced or set up by the animal itself, but originated 'by the environment and by many things that enter into the animal'. In other words, the animal does not experience them through its own instrumentality. Aristotle explains at *GC* I. 5, 321b 17 ff. (cf. *DA* 416b 123 ff.) that animal growth is related to the nutriment that the animal obtains from the environment. He says that, for instance, animal flesh does not grow by itself, but by the food the animal consumes (322a 7-8). The food is transformed 'into the same form as that of flesh' (322a 1-3). Thus food from the environment is necessary for animal growth. On the other hand, respiration is

the inhalation and the exhalation of air in the environment (*Resp.* 471a 8-9). Animal life is dependent on the amount of the air that the animal breathes in and lets out by means of respiration. The role of air breathed in is, in effect, to cool down the bodily temperature of the animal that is necessary for keeping it alive (473a 3-4). It is thus clear that the animal requires a direct relation to the environment in order to undergo such motions as increase, decrease, and respiration. However, whether this kind of relation is to be the ground for denying that they are some types of self-motion is still subject to further discussion.

For the moment, let us turn to Aristotle's repeated remarks on waking and sleeping in both passages (A) and (B). Passage (A) reads as if the environment somehow causes intellect or desire (*orexis*) to bring about a motion, when animals are at sleep. However, this cannot be true because the animal's desire, for instance, cannot be directly affected by the environment without involving sense-perception. However, Aristotle tells us that "an animal when asleep is unable to exercise, in the simple sense, any sensory faculty whatever" (*Somn.* 455a 9-10). In the *Somn.*, he explains that no animal can sleep or wake without sense-perception, because they are 'affections of the primary faculty of sense-perception' (454a 20-24; b 28-29). However, this does not mean that the animal is exercising its perception in sleep. For sleep is the suspension of actual perception. On the contrary, while the animal is awake, the animal's sense-perception is at work. Thus we might take it that in passage (A), Aristotle is making an analogy between waking states and sleeping states. That is, he is saying that, as in waking states the animal must have some cognitive faculties in initiating its locomotion, there must be some motion in order for it to wake up from its sleeping state. For when the animal is asleep, it will not be woken up unless there is a certain motion other than sense-perception that wakes it up because sense-perception is at rest in sleep (cf. 454a 3-7; *Ph.* 253a 19-20). Moreover, its waking up must not be

spontaneous but by means of something since no motion is *ex nihilo*. For this reason, although the animal might have a dream which is a kind of exercise of sense-perception, it cannot be what wakes the animal up because it is not a motion that *always* goes on (*Somn.* 456a 24-26; b 11-14).

What is it, then, that wakes the animal up from its sleep? Aristotle offers two possible accounts. According to one, the animal wakes up because of its nature in virtue of which it pursues the goal or what is best.

> Now, since there are several types of cause ..., in the first place, then, as we assert that nature operates for the sake of an end, and that this end is a good; and that to every creature which is endowed by nature with the power to move, but cannot with pleasure to itself move always and continuously, rest is necessary and beneficial ... But the waking state is the goal, since the exercise of sense-perception or of thought is the goal for all beings to which either of these appertains; inasmuch as these are best, and the goal is what is best. Again sleep belongs of necessity to each animal. I use the term 'necessity' in its conditional sense, meaning that if an animal is to exist and have its own nature, it must have certain endowments; and, if these are to belong to it, certain others likewise must belong to it. (455b 13-28)

We here encounter a typical line of Aristotle's teleological account of natural beings and their behaviours: that is, natural beings tend to move in virtue of their natures towards an end which is intrinsically good or best. Aristotle conceives that sleep is necessary for animals for they have the capacity for sense-perception and they will be unable to exercise it without rest (454b 7-8). While in sleep, they cannot actualise the capacity. However, the exercise of sense-perception as well as of thought is what is best for them and thus they wake up. What is it then that is best for animals? Aristotle answers that it is their survival (cf. *DA* 415b 12-22). And, in order for them to survive they must have some 'endowments' such as the capacity for sense-perception.

Secondly, Aristotle, on the other hand, explains the reason for sleeping and waking up in mechanical or physiological terms, i.e. in terms of the hot and the cold in the process of

digestion. According to him, the digestion of consumed food produces the heat in the animal and the heat puts the animal to sleep (*Somn.* 456b 27-28; 457b 7 ff.). At this stage, he ascribes the role of cooling down or controlling the heat to the heart (456a 4 ff.). Thus, when the digestion is completed, the heart cools down the heat in the animal and the animal wakes up (458a 10 ff.). For Aristotle, the presence of natural heat is necessary for every living being (*Juv.* 470a 20-21; 473a 9). He introduces the digestion of food and the surrounding air as two factors that aid the control of the heat to keep the living being alive (470a 21-22; *Resp.* 476a 21 ff.). The digested food is hot (Cf. *Somn.* 457a 5; b 10) and "sleep comes on when the corporeal element is conveyed upwards by the hot, along the veins, to the head" (457b 20-21). The completion of the digestion means the body is cooled off and so the animal wakes up.

Aristotle's account of sleeping and waking up in both (A) and (B) is close to the second account in physiological terms. In effect, he does not show any sign of having the teleological account in mind at this stage. In the passages, he says that the physiological process of digestion is completed while the animal is in sleep. Why does Aristotle try to explain this particular example? It is conceivable that he confronts an objection raised by those who argue for the existence of the self-mover on the basis of the observation of the animal in sleep. That is, they would argue that the animal is not in motion while in sleep, but, when it is awake, it appears to start its motion without being moved by anything external. Therefore animal motion is spontaneous and there is no necessity that motion should be eternal. It seems that Aristotle is thus required to show that the state of sleep is not an absolute absence of motion. His account is indeed plausible in that, as we know, there is always some motion in the animal's body even in sleep. There is no doubt that the animal grows and respires while sleeping. And the animal must have a certain relation to

food or air in the environment in producing those motions. However, in passages (A) and (B), Aristotle is chiefly concerned with the digestion of the food obtained from the environment.

What about animal locomotion? The reason for his distinction of it from other types of motion is not immediately clear. How is the digestion of food related to locomotion? As far as locomotion is concerned, we might think of two senses of food being a necessary condition for it. Firstly, food is a necessary condition for locomotion in the sense of nutriment. That is, were there no food, the animal would not obtain nutriment necessary for its survival. Secondly, food is necessary in the sense that it is an object of animal locomotion. In passage (A), Aristotle mentions intellect and desire (*orexis*) as possible causes of some motion. However, this motion that is brought about by them is certainly not growth or digestion for the obvious reason that the animal does not desire to grow or digest. As we shall see in Chapter III, among the three types of motion (qualitative motion, quantitative motion, and locomotion) of which the animal is capable in virtue of its soul (*DA* 406a 11-14), Aristotle thinks that locomotion is the only motion in which the animal employs either intellect or *orexis*. Since *orexis* is *orexis* for something, the possession of *orexis* would be vacuous without that 'something'.[63] It thus appears that locomotion is not 'strictly' originated by animals on both counts: the existence of food is a pre-condition for the maintenance of animal life that enables the animal to execute the motion and it is also necessary as an object of *orexis*. However, in the *Ph.* Aristotle is not concerned with the problem of how locomotion is aroused. And, indeed, it is dealt with at a much later stage in the *DA* and the *MA*. There is no doubt that animal locomotion is aroused in relation to the animal's recognition of an external object. However, in stating that locomotion is not

[63] See Ch. III. Sec. 3 (*a*).

'strictly' self-motion, Aristotle does not appear to be interested in that sort of matter yet. It seems that he is saying that, since food is necessary for the survival of the animal which is the subject of locomotion, locomotion is not a motion originated by the animal in a strict sense.

In passage (B), Aristotle distinguishes locomotion from other types of motion in terms of 'instrumentality'. He takes increase, decrease, and respiration as examples of the motions that the animal does not experience through its 'own instrumentality'. The point he tries to make here seems to be that in producing locomotion the animal does not directly manipulate the external object, as it does in digestion and respiration. The animal requires food and air in growing and breathing and, also, in controlling the vital heat that is necessary for maintaining its life. In these cases, it makes actual use of external objects. On the other hand, in the case of locomotion the animal requires its bodily structures and organs that are composed of the elements that are originally obtained from external objects. However, it is not the case that the animal directly makes use of the external objects. In other words, the animal in locomotion is less dependent on the external object than in growth and breathing. Elsewhere Aristotle says that this is a reason for the primacy of locomotion in the animal.

> ... a thing that is in motion loses its being less in the process of locomotion than in any other kind of motion: it is the only motion that does not involve a change of being in the sense in which there is a change in quality when a thing is altered and a change in quantity when a thing is increased or decreased (261a 20-23).

In discussing the motion of the living being in *Ph.* VIII, Aristotle appears interested in locomotion (e.g. 255a 3 ff.). This tendency seems to be related to his discussion of the primacy of locomotion in chs. 7-10 where he tries to establish circular motion as the eternal

motion of the universe. In effect, Aristotle seems to think that, since locomotion is primary in the universe, it must be also primary in the animal (cf. 261a 14-26). However, he thinks that locomotion is not prior in time to other types of motion in the animal, whereas it is in the universe. He explicitly says that the animal acquires it last in its development (261a 14-15; cf. 260b 15 ff.; *Met.* V. 11). Unlike the eternal motion (260b 29-30), the primacy of locomotion in the animal is not in respect of time, but in respect of the perfection of being in its teleological order (261a 18-19).

If locomotion is differentiated from other motions in this way, does Aristotle want to say that e.g. digestion, growth, and respiration are to be characterised as motions caused 'entirely' by the environment? As we have seen, he explains them in physiological or mechanical terms. If he thinks that those motions are initiated by the external mover alone, then there is no doubt that he is, at least, saying that they are not types of self-motion. However, Aristotle often claims that the environment is not that which affects the animal, but that which is affected by the animal. In other words, the food is not something that feeds the animal, but that with which the animal is fed. In the *DA*, Aristotle says as follows:

> The process of nutrition involves three factors; what is fed, that wherewith it is fed, and what does the feeding; of these what feeds is the first soul, what is fed is the body which has that soul in it, and that with which it is fed is the food. ... The expression 'wherewith it is fed' is ambiguous just as is the expression 'wherewith the ship is steered'; that may mean either the hand or the rudder, i.e. either what is moved and sets in movement, or what is merely moved. All food must be capable of being digested, and what produces digestion is warmth; that is why everything that has soul in it possesses warmth. (416b 20-29)

Aristotle is lingering over the problem of how to understand the role of food in animal motion, but he makes it clear that the food is not the mover of the motion. More clearly, in *DA* II. 4, he says that the animal rather than the food is responsible for its nutrition.[64]

... food is acted upon by what is nourished by it, not the other way around, as timber is worked by a carpenter and not conversely; there is a change in the carpenter but it is merely a change from not-working to working. (416a 34-b 3)

He does not deny that the food is a necessary condition for nutrition. And yet he does not want to say that it is a sufficient condition for, or an efficient *aition* of, the animal. He thus goes on to say,

Since nothing except what is alive can be fed, what is fed is the besouled body and just because it has soul in it. Hence food is essentially related to what has soul in it. Food has a power which is other than the power to increase the bulk of what is fed by it; so far forth as what has soul in it is a quantum, food may increase its quantity, but *it is only so far as what has soul in it is a 'this-somewhat' or substance that food acts as food*; in that case it maintains the being of what is fed, and that continues to be what it is so long as the process of nutrition continues. (416b 10-14. Italics are mine.)

Above all, what Aristotle clearly tells us here is that the food is not something that forces the animal to produce motion against its nature. As he says, food acts as food to increase the volume of the ensouled body in so far as the ensouled body has such a nature. We need to recall our earlier discussion of the relation between the nature of the simple bodies and the prime mover. There we saw that the prime mover does not bring about their motion *per accidens*, but merely accelerates their motion *per se*.[65] Similarly, in the relation between the environment, i.e. food, and the animal, the food does not bring about the animal's motion

[64] See also *Resp.* 472a 23 where he says that "the origin of breathing and of the respiratory motion must be within [the animal]; it is not due to pressure from around".

[65] The SF cannot trigger the motion of the moved part because, if it did, "it would need to alter from a previous state to furnish the stimulation, and would thus fail to be unmoved" (Gill, 1991, p. 244).

per accidens, i.e. against its nature; it aids the animal to perfect its motion *per se*, i.e. according to its nature. If so, we might now conclude that, as opposed to the superficial reading of passages (A) and (B), Aristotle does not deny the existence of any kind of animal self-motion, whether it is growth or respiration.[66] In other words, he accepts self-motion in other categories of motion (than locomotion) in a qualified sense in which he accepts for the simple bodies. However, there is no doubt that he considers them also as types of self-motion.[67]

(*d*) *The Identification of the SF and the Soul*

We have so far granted that the SF is identified with the soul without providing any textual evidence. Does Aristotle identify the two? Waterlow points out that, although Aristotle "never in the *Physics* mentions soul as the change-element in self-change," it is, nonetheless, hard to resist the view that Aristotle appears to identify "the source of self-change with *soul*".[68] In effect, there are some passages in *Ph.* where Aristotle seems to acknowledge the involvement of soul in animal motion, but they are too obscure to be used as direct evidence for the claim that he identifies the SF with the soul. For instance, in VIII. 9, he refers to 'those who make soul the *aition* of motion' and says that they consider the soul as the first principle of the living being that moves itself (265b 33-266a 2). However, he merely reports their view without making his position clear whether he is for or against

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[66] Nowhere in *Ph.* VIII, does he explicitly raise the question whether plants are also to be regarded as capable of producing self-motion. However, as seen earlier, Aristotle thinks that self-motion is the characteristic of life, i.e. in virtue of the soul. And since plants have the nutritive soul (413a 25 ff.) which is related to nutrition, growth, etc., it is reasonable to accept that they are also capable of self-motion in growth. Their two-way motion would be to extract and not to extract nutriment from the environment. See Gill (1991), p. 245. Cf. Ch. III. Sec. 2 (*c*) for the relation between locomotion and other types of animal motion.

[67] Note that, in this section, my chief concern is the relation between the whole animal and the external mover, or the environment. The relation between the SF and the moved part, or the soul and the body will be dealt with in more detail in the subsequent chapter.

[68] Waterlow (1982), p. 213.

it. Another implication of the involvement of the soul in self-motion might be found in passage (A) cited above where Aristotle mentions that such soul-capacities as desire (ὄρεξις) and intellect (διάνοια) are necessary in giving rise to animal locomotion. However, they are introduced as moved movers rather than as unmoved movers. We might attempt to identify the unmoved mover with the soul from the characterisation of the mover in the self-mover as being unmoved (τὸ κινοῦν ἀκίνητον). However, the *Physics* does not make explicit whether we are to identify it with the soul or with some other entity whatever it may be.

Thus the identification of the SF with the soul must be made in comparison of the characterisations of the unmoved mover in the *Ph.* with those of the soul in the *DA*. The most prominent evidence for such a view is Aristotle's introduction of the soul as the source of motion in the *DA* (esp. 415b 22-27). He also characterises it as unmoved in I. 2. He there accepts his predecessors' characterisation of the soul as the source of motion, but rejects their characterisation of it as a material element 'which moves itself' (esp. 404a 21-24). In the subsequent chapter, he argues that if the soul moves itself, it must have a place (406a 14 ff.). If so, it might be capable of separate existence (403a 10-11) and 'a resurrection of animals from the dead' would be possible (406b 2 ff.). In this way, he goes on to claim that "it is a mistake to say that the soul is a magnitude" (407a 3 ff.).[69] From this, he concludes that motion cannot be an attribute of it. In *DA* I. 3-4, Aristotle strongly rejects the view that the soul can be moved even 'by itself' (408b 30-32).

What about the SF? As seen earlier, Aristotle maintains that the SF is perishable. However, we need to ask whether he means that the SF is somehow movable. In the *GC* I. 7, Aristotle tells us that the tendency to be moved is a characteristic of matter.

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[69] See Hick's note on 407a 3-26.

As to matter, it (*qua* matter) is passive. Now fire contains the hot embodied in matter; but a hot separate from matter (if such a thing existed) could not suffer any action. Perhaps, indeed, it is impossible that the hot should exist in separation from matter; but if there are any entities thus separable, what we are saying would be true of them. (324b 18-21)

He here implies that no entity in motion can be separable from matter in reality. However, he does not thereby deny that there can be a mover that is not itself in motion. The existence of the UF is certainly separable from matter.[70] In the *Met.*, Aristotle claims that the UF is immaterial since it is an eternal mover (1071b 21-22). Later on, he again says that "there is a substance which is eternal and unmovable and separate from sensible things. ... this substance cannot have any magnitude, but is without parts and indivisible. For it produces movement through infinite time, but nothing finite has infinite power" (1073a 4-9).

The UF is exempt from all sorts of motion, 'both unqualified and accidental' since it does not have matter (*Ph.* 258b 15; 259b 23-24). However, even if for Aristotle the SF should be different in this respect from the UF, he cannot thereby deny its immovability. For the SF is by definition that which is not moved by anything. For Aristotle, 'being unmoved' primarily implies that it is not embodied in matter since whatever has matter is subject to change, namely, the matter *qua* matter is susceptible to change (*GC* 324b 4-5; 335b 30-31). Thus if the SF is involved in motion, it is not a motion *qua* the unmoved mover, but *qua* matter. If so, the perishability of the SF must be explained in terms of 'accidental motion'. That is, although the SF is immovable, it is subject to motion since it involves some matter as an underlying subject. Thus the perishability of the SF must not be ascribed to the SF itself, but to its underlying matter. The main difference between the UF and the SF is that the SF is enmattered, whereas the UF is in no way enmattered. If

[70] E.g. *Ph.* 258b 24-25; 266a 10 ff.; *Met.* 1071b 21 ff.; 1073a 4-13.

something is composed of matter, it is in principle subject to change. However, the SF is not itself matter, but enmattered. Thus Aristotle says that it is subject to change not *per se*, but *per accidens* or, in other words, it is moved not *qua* itself, but *qua* being enmattered.[71] At *DA*. 406b 4 ff., Aristotle explains the motion of the soul in the same way. Considering all the characteristics of the unmoved moving part and the soul we have seen so far, it appears that we are now entitled to identify them with each other.

Let us now turn to see more about what Aristotle means by accidental motion of the SF or the soul. He says in *Ph*. VIII. 6,

> (Moreover in all these things the first mover and cause of their self-motion is itself moved by itself, though in an accidental sense: that is to say, the body changes its place, so that that which is in the body changes its place also and moves itself by leverage.) Hence we may be sure that if a thing belongs to the class of unmoved things which move themselves accidentally, it is impossible that it should cause continuous motion. So the necessity that there should be motion continuously requires that there should be a first mover that is unmoved even accidentally ... (259b 17 ff.)[72]

How do we understand the statement that the SF 'moves itself by leverage'? Ross takes Aristotle to mean that "If a lever is to continue to lift a weight, it must keep in contact with the weight as the latter moves. Aristotle's thought is that similarly the soul as it moves the body must keep in contact with the body, and thus by moving the body incidentally moves

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[71] Aristotle thus says that if there is any motion natural to the soul, "it must have a place" (*DA* 406a 14-22).

[72] Aristotle in *Ph*. V. 1 distinguishes three types of change: change καθ' αὑτό, i.e. the type of change that "a thing is in motion ... in virtue of being *itself* directly in motion (224a 27-31)," κατὰ συμβεβηκός, i.e. the type of change that a thing is said to change because its concomitant changes, and change κατὰ μέρος (a 21-23), i.e. the type of change that "a thing is said without qualification to change because something belonging to it changes (a 23-27)". However, the change of the SF does not seem to belong to any of this type. It is certainly not the type of change καθ' αὑτό for the SF is by definition not to be in motion. Nor is it change κατὰ συμβεβηκός for the same reason, although Aristotle calls 'change of the SF' 'change κατὰ συμβεβηκός'. The change under discussion rather seems to be the opposite of change κατὰ μέρος because the SF changes in virtue of the change of the whole to which it belongs. On the other hand, according to *An. Post*. I. 4, 73b 10 ff., "If one event occurs because of another, then the connection between the two events is *per se* and not *per accidens*, or coincidental" (Witt, 1989, p. 105, n. 3). Then, the relation between the motion of the SF and the motion of the body in which it resides seems *per se* in the sense that whenever the ensouled body moves it is also moved. However, Aristotle wants to say that the motion of the SF in virtue of being enmattered is *per accidens* since there is no change that is *per se* to the SF itself.

itself'.[73] His comment gives the impression that the soul has a bodily contact with the body. However, this cannot be true since the soul is an unmoved mover that is not itself material. Thus the contact the soul has with the body cannot be the same as that which the lever has with the weight. In an exposition of the problem of how the UF moves in *Met.* XII. 7, Aristotle says that it produces motion in beings 'by being loved' (1072b 3). At an earlier stage, he also states that "the object of desire and the object of thought move in this way; they move without being moved" (1072a 26-27). Aristotle elsewhere explains this sort of one-way motion as follows:

> As a rule, no doubt, if A touches B, B touches A. ... Hence if anything imparts motion without itself being moved, it may touch the moved and yet itself be touched by nothing—for we say sometimes that the man who grieves us touches us, but not that we touch him. (*GC* 323a 25-33)

The example of a man's grief suggests that by touch Aristotle here does not necessarily mean any bodily contact. He elsewhere says that the condition for one-way motion is the agent having different matter from the patient (328a 22-23). However, this is not generally applied to all the cases of one-way relationship since it is not the case that the UF and the SF have a different sort of matter from what they move, but, rather, that they are not composed of any matter at all.

A plausible account of the problem of how the SF 'moves itself by leverage' might be given by Ackrill's reading of *DA* 408b 1 ff.[74]

> The soul does not use the body as a craftsman uses tools, but rather as a craft (such as skill at carpentry) may be said to use tools, in that it is necessarily exercised and displayed through the movement of tools. The powers distinctive of living things are exercised and displayed in the movement of their bodies. ... The other phrase, 'a man does things with his soul', is also not analogous to 'a craftsman does things with this tool', but rather to 'a craftsman does things with his skill'. It is in virtue of his being alive, having faculties

[73] Ross (1936), note on 259b 19.
[74] Ackrill (1981), p. 62.

of nutrition and desire, that an animal feeds and desires; in other words, the animal feeds and desires 'with his soul'

A significant difference between the UF and the SF is that the former moves other beings without being embodied in any matter, whereas the latter is necessarily embodied. In other words, the SF is not capable of doing anything without involving the body. That is to say, since the SF is not that which moves, or is moved by, itself *qua* itself, it loses its status of the SF, i.e. the unmoved mover of the self-mover, when it is not enmattered or when it is separated from the body. That is, as seen earlier, the relation between the SF and the moved part is an internal relation. The SF does not move external things without involving the moved part and, also, the moved part is not moved by them without involving the SF. When the two parts are together, they move, or are moved by, external things. Ackrill's account indeed tells us of such a close relationship of the soul with the body. The soul does not move the body as a craftsman uses a tool to make, say, a chair. The agent is not the man separated from the tool, but the tool which displays the art of making a chair, where the tool and the art are not separable. When the tool is broken, it is not the case that the art itself is also destroyed. But the art is destroyed *qua* being enmattered in the tool. All the same, when an animal is pushed by an external object, it is not the case that the soul of the animal itself is pushed, but that the body which has the soul in it is pushed and the soul is thereby accidentally pushed. However, there is a significant difference in this analogy in that one can replace a tool with another when it is broken and go on to work, whereas in the case of the soul-body relationship the soul is not replaceable, as I shall argue in the subsequent chapters. In effect, the problem of the relationship between the soul and the body is a chief concern throughout the present thesis. For the moment, let this account suffice as a preliminary work concerning their relationship. In the following chapter, we

shall turn to examine some current interpretations of their relationship and attempt to set out the most plausible way of understanding it.

Summary

Aristotle's analysis of self-motion distinguishes four types of motion: (i) forced motion in which the patient does not have any source of motion within itself, (ii) the motion *per se* of the simple bodies that are capable of one-way motion by virtue of having the source within themselves but that still have a relation to the first mover of the universe, (iii) the self-motion of the living being that is capable of two-way motion by virtue of having the soul and the corresponding bodily part, and (iv) the motion of the unmoved mover that moves without being moved. As the simple bodies in (ii) are somehow moved by the first mover, the living being in (iii) also has a certain relation to the environment. Nonetheless, they are differentiated from each other because the living being in (iii) has two parts that have distinct roles, the SF and the moved part. The SF is characterised as moving the body without being itself moved by anything else. Although the SF and the UF are both unmoved movers, the SF differs from the UF in that it is essentially embodied. Thus, unlike the UF which is eternal and exempt from all sorts of change, the SF is perishable and is subject to change albeit only accidentally. The change of the SF is not *per se*, but *per accidens* that it experiences by virtue of being embodied. This characterisation gives Aristotle the benefit of reconciling the presence of the unmoved mover in the self-mover with the self-mover's passive motion by the environment.[75]

[75] As noted, the self-mover's passive motion here must be distinguished from its motion *per accidens*. That is, its motion *per accidens* is motion imparted by the external mover without any relation to the self-mover's inner capacity. But the phrase 'the self-mover's passive motion' here presupposes the self-mover's inner capacity which cannot be actualised without a relation to the external mover. See below.

The main point I have argued is that for Aristotle there is no self-mover and so no self-motion in an unqualified sense.[76] His view is different from the view that the self-mover has nothing to do with the external world in an unqualified sense. In so far as Aristotle confines his conception of self-motion as that which has an unmoved mover within it, he does not necessarily have to deny the influence of the environment. For the influence of the environment on the self-mover is understood as the affection on the body, but not on the soul. Although the soul also suffers a passive motion since it is necessarily embodied in the body, Aristotle does not want to call it motion *per se* of the soul. In maintaining this position, he, presumably, has in mind the conceptual characterisation of the UF which must be exempt from all sorts of change and wants to ascribe the same sort of characteristics to the SF as well. However, since the SF, unlike the UF, is enmattered, he has to find a way to explain its motion. Thus he explains that the motion of the SF is not *per se*, but *per accidens* (*Ph.* 259b 17 ff.). I believe that Aristotle's account of the self-mover is very plausible once the preconception that the self-mover must be completely isolated from the environment is given up. Since the self-motion of the living being is thus granted, we are now entitled to turn to discuss its inner mechanism.

[76] Aristotle treats the environment as the proximate reason for animal locomotion without considering the relation between the environment and the first mover of the universe. However, it should be taken for granted that there is a certain relation between them. At any rate, it does not concern us since the question we have been dealing with is how Aristotle is able to maintain the living being as the self-mover that is responsible for its own motion without denying its passivity, i.e. the influence of the environment.

CHAPTER II

ARISTOTLE'S HYLOMORPHISM

One might justly point out that Aristotle's analysis, in the *Ph.*, of the conception of the self-mover in terms of its internal parts, i.e. the SF and the moved part, is incomplete by itself. For, although he establishes, in the treatise, that there must be such parts in the self-mover, the questions about what they are and how the SF imparts motion to the moved part are left for other treatises. For instance, as we saw, the question of what the two internal parts are cannot be answered without detailed examination of the characterisations of soul and body in the *DA*. Given the identification, the agent-patient relationship between the SF and the moved part turns out to be that between the soul and the body. On the other hand, Aristotle regards the problem of how the soul moves the body as a subject matter of the second half of the *MA* on animal locomotion (700b 9-10). Thus, it seems that in dealing with his conception of the self-mover, our journey begun with *Ph.* VIII reaches the *MA* via the *DA*.[77] Since, in the previous chapter, we have focused on the *Ph.*, I shall now turn to the *DA*.

There is a unanimous agreement that Aristotle's distinction between soul and body is an extended application of his general hylomorphism, i.e. his view that natural beings are composed of matter (*hyle*) and form (*morphe*). However, the question about how to understand the soul-body relationship in Aristotle is highly controversial. This question has been tackled by a remarkable number of scholars, presumably due to the growing interest in modern philosophical theories about the nature of the mind and the thought that his views may resemble modern ones. Interpretations of Aristotle's hylomorphism have been

[77] Cf. Nussbaum (1978), pp. 107-108.

attempted from various perspectives. Even two such extreme theses as materialism and dualism can be worked out for it because Aristotle, on the one hand, talks about the non-separability of the soul from the body,[78] and, on the other hand, he appears to allow the independent existence of the soul, i.e. the active *nous* (intellect) that has no bodily organs (*DA* 429a 23-24; 430a 23 ff.).[79] Moreover, as we shall presently see, those who interpret Aristotle as a materialist also differ in construing his views on the relationship between the soul and the body. In the present chapter, I shall discuss this highly controversial matter on a theoretical basis. I say 'on a theoretical basis' because I shall not analyse here the soul-body relationship in the example of a particular living activity, but examine Aristotle's more general remarks on the subject. I shall discuss, in particular, the functionalist interpretation and some objections to it, and then ask what kind of an alternative interpretation can be presented.[80] Let us begin by examining some modern views on Aristotle's hylomorphism.[81]

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[78] E.g. *DA* 412b 5-6; 413a 3-5; 414a 14-19; *Met.* 1045b 16-21.

[79] In the present thesis, I shall largely ignore the notorious problem of the active *nous* (intellect) for the following reasons: firstly, as noted, this thesis concerns animal locomotion in general and so with the relationship between the psychological and the physiological activities in locomotion. Thus the *nous* that belongs only to humans is not of my particular concern. Secondly, according to the discussion of self-motion in Ch. I, Aristotle never appears to allow for the existence of the unmoved mover (i.e. the soul) that does not have any relation to the moved part (i.e. the body). Thus, if the expression 'that which has no organ' means that there is no corresponding moved part or that it is not actualised in a body, then it is beyond the range of self-motion. Nonetheless, our brief discussion of the soul-body relationship in locomotion in Ch. V will suggest that, if the rational faculty is involved in the arousal of locomotion, it will involve a physiological part for its actualisation and, also, accompany a bodily change (cf. the discussion of the locomotive faculty of the soul in Chs. III and IV. Sec. 2). For a dualist account of Aristotle, see e.g. Robinson (1983, pp. 123-144) on the problem of active *nous*; Heinamman (1990, pp. 83-102) on the existence of non-physicsl substances; Shields (1988, pp. 103-138) on supervenient dualism; Irwin (1991, pp. 70-73) on quasi-dualism.

[80] Once this is done, the remaining chapters will be devoted to verify whether the alternative interpretation is plausible and, if so, how plausible it is, by analysing the psychological aspect (Chapters III & IV) and the physiological aspect (Chapter V) of animal locomotion. Having done this, we shall be in a better position to say something more substantial about Aristotle's hylomorphism itself and, also, about the validity of the suggested interpretation.

[81] Hereafter, I shall use 'hylomorphism' to refer to Aristotle's soul-body distinction rather than his form-matter distinction which can be also applied to artefacts, unless otherwise stated.

II. 1 *Some Current Views on Aristotle's Hylomorphism*

As seen in Chapter I, Aristotle explains the motion of the living being in terms of two inner parts, a SF and a moved part, which can be identified with soul and body, respectively. His conception of the self-mover implies that it is the living being that produces a peculiar output, i.e. two-way motion, by means of the unmoved moving part within it, which is distinct from the one-way motion of the non-living being. This is not to say that it has no link whatsoever with the outer world. The living being does need to obtain food from the environment for its survival (e.g. *Long. Vit.* 466b 29-32).[82] The foregoing discussion has shown that there is a certain relationship between the soul and the body (or the unmoved moving part and the moving part) and, also, between the living being and the environment. And yet there still remain questions to be considered.

The relation between the living being and the environment leads us to ask what it is in the living body that is moved by the environment or, rather, whether what is moved by the environment is the living being as a whole or some part of it. It is, as Aristotle would say (*Ph.* 255a 1-3), not difficult to observe what the moving source is in the case of *forced* animal locomotion. For instance, when a man is pushed away by strong wind, the source is no doubt the wind. In this case, Aristotle's account of the motion *per accidens* of the SF, i.e. the soul, in the man is well and clearly exemplified. That is, the man is pushed not by virtue of having a soul, but of having a body. On the contrary, it is not so clear in what way the environment contributes to the man's voluntary motion in place. Aristotle at times appears to say that the soul is moved by the environment (*DA* 433b 15 ff.; *MA* 701b 33 ff.). It then seems that he envisages that the soul, moved by the environment, moves the body. However, what does it mean to say that the soul is moved and that it is a mover that imparts

[82] See note 76.

motion to the body? We must not forget that the soul is not simply a mover, but an unmoved mover. If so, it must not be the soul *qua* itself that is moved by the environment since an unmoved mover is by definition that which is not moved by anything. It cannot be the body without the soul, either. For the living being is living in virtue of the soul and, also, it has the capacity to exercise its activities in virtue of it. We thus concluded in our earlier discussion that parts of the living being do not have any direct link with the external mover without involving each other. That is, the living being as a whole is moved by the environment.

Now we have to ask what is meant by 'the living being as a whole.' For, if the living being is always moved as a whole by the environment, then it is not clear what role the soul plays in it. Aristotle has no doubt, as we saw, that animal motion is related to the environment whether the animal is awake or asleep. For instance, in bringing about animal locomotion, the external object must be presented in actuality or in *phantasia* or thought (*DA* 433a 9-12) as an object for the animal to pursue (see Chs. III & IV). On the other hand, food is what enables the animal to grow while it is sleeping. If so, what is the role of the soul as a mover in the animal? What is clear is that the soul and the body in the animal are so interrelated as to bring about its motion. As we saw earlier, for Aristotle it is not the case that the soul moves the body in the way in which the craftsman uses tools, but that the living being moves itself with the soul (*DA* 408b 1-18; cf. 403a 3 ff.). However, what exactly that means is subject to further discussion.

(*a*) *Cartesian Dualism*

In effect, when such an expression as 'the soul moves the body' is literally understood, it gives the impression that Aristotle is talking about the relation between two somehow

separate entities in an individual. In characterising his hylomorphism, commentators often contrast it with Cartesian dualism.[83] Such a contrast is indeed very important since we are philosophically closer descendants of Descartes than Aristotle and, as a result, our conception of soul and body is more likely to be influenced by Descartes'. However, Aristotle's hylomorphism has some significant features that cannot be understood without stepping out of, or setting aside, the Cartesian influence.

It is well known that "Descartes held that there were two (and only two) kinds of (created) substance, namely minds or thinking substances and bodies or corporeal substances"[84] that can be conceived without reference to each other. For Descartes, the properties of body are modes of extension whose characteristics include occupying space, being perceived by touch, sight, hearing, taste, or the like,[85] and the properties of mind are modes of thought which include willing, sensation, imagination, as well as intellectual states or activities.[86] He thus maintains that they are two separate entities that do not have any characteristics in common, but he, nonetheless, believes that they causally interact with each other. He thinks that, although the soul is united to all the parts of the body, there is nevertheless one particular part in the body to which the soul is more closely related.[87] This part is the pineal gland in the brain, which is the seat in which the soul immediately exercises its functions and brings about bodily change, and which is also the part of the body which brings about change in the soul.[88] A general response to this account is to ask, if the soul and the body are so different in kind, how their interaction is possible. Does Aristotle have

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[83] E.g. Sorabji (1974), p. 45 ff.; Wilkes (1978), pp. 127-135; Irwin (1991), pp. 70-73; Code and Moravcsik (1992), pp. 139-141.
[84] Baker and Morris (1996), p. 11.
[85] Anscombe and Geach (1954), p. 68.
[86] Anscombe and Geach (1954), pp. 70-71 and pp. 109-124.
[87] *The Passions of the Soul* I. 30-35.
[88] For more references to Descartes' remarks on the pineal gland, see B. Williams (1978), p. 280; Voss (tr.) (1989), p. 36 n. 35.

the sort of pineal gland problem? In effect, the thought that he will face the Cartesian difficulty is no doubt derived from regarding Aristotle's conception of soul and body as Cartesian. What differences are there between the two?

Firstly, Descartes thinks that animals, other than human beings, do not have souls,[89] whereas Aristotle ascribes souls not only to human beings, but also to irrational animals and even to plants.[90] Thus Aristotle's conception of soul is related not only to mental activities (e.g. sense-perception, desire, thought, etc.) but also to other living activities such as nutrition, digestion, respiration, reproduction, etc. This is a primary feature that differentiates Aristotle's hylomorphism from contemporary philosophy of mind, which is chiefly concerned with mental activities of human beings. On the other hand, "For Descartes, unlike ancient thinkers, the difference between living bodies and dead ones is a mechanical difference which in itself has nothing to do with the soul. A living body and a dead one differ as a going watch differs from a stopped one, and we must not say that the body dies because the soul leaves it, but that the soul leaves because the body dies (*Passions of the Soul* i 6, 5)".[91] Thus, according to Descartes, the soul may survive in theory even after the body ceases to exist. However, Aristotle's conception of the soul appears different from Descartes' in this respect. For Aristotle the soul is the form of the body, the survival of the soul without the body does not have any meaning (cf. *DA* 412a 6 ff.; 403a 3-5). Also, the living being initiates its motion only when the soul as the SF within it has a relation to the moved part. For neither of the parts alone can have any relation to the external object nor can it act without involving the other part, as we saw in the

[89] For references, see B. Williams (1978), pp. 282-283.
[90] *DA* II. 2, 413a 21 ff. Thus it is important to bear in mind the fact that Aristotle's philosophy of mind or psychology, as we term it, is not merely concerned with mental states and events.
[91] B. Williams (1978), p. 278.

preceding chapter. Consequently, we must say that for Aristotle the soul perishes with the body.[92]

Despite these apparent differences, one might still take Aristotle's conception of the soul to be Cartesian. This can result from the identification of the moved part in the self-mover as the Cartesian body which does not have any characteristics in common with the soul. Aristotle conceives that a living organism is constituted of soul and body which he regards as form and matter, respectively (*DA* 412a 6 ff.; 413a 2-3). Thus if one of them is taken to be a mover in a self-mover, then it seems undeniable that the other must be identified as its moved part. In this case, although the SF and the moved part do not *interact* with each other since their motion is one-way,[93] they might still appear to have a one-way causal relationship in our sense of 'causal'. Thus construed, one might suggest that Aristotle also has a version of the pineal gland problem that besets the Cartesian philosophy of mind. This impression might be strengthened by one reading of Aristotle's passage where he appears to say that the soul is an efficient cause, that which brings about change in the body (e.g. *DA* 415b 22 ff.). It will be shown in Sec. 2 (*b*) of this chapter that that impression is misleading and that Aristotle does not have the pineal gland problem.[94]

(*b*) *Some Materialist Accounts*

In general, if one is not a dualist who postulates soul and body as two distinct substances but cannot deny the existence of matter or body as the ontological basis of the activities of the mind, one is inclined to embrace some form of materialism. For this reason,

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[92] See Ch. I. Sec. 2 (*d*).

[93] As we saw in a discussion of the relationship between inner parts of the self-mover, the SF moves the moved part, but it is not moved by the latter in return (Ch. I. Sec. 2 (*a*)). Note that the one-way motion here must not be confused with the one-way motion of the simple bodies, e.g. fire moving upwards, contrasted with the two-way motion of living beings.

[94] See also Ch. V. Sec. 1 (*b*).

a number of commentators characterise Aristotle as holding a version of materialism since there is no doubt that he takes the body to be the ontological basis of psychological activities without acknowledging the independent existence of the soul without the body. However, although they ascribe some form of materialism to him, they are not in agreement as to what form of materialism should be ascribed to him.[95]

Although Slakey was not the first Aristotelian scholar who was concerned to interpret Aristotle's hylomorphic distinction between soul and body in materialistic terms, it has long been a matter of dispute since he presented, as he himself admitted, "a literal interpretation of Aristotle's statement that perception is a process in which the perceived object makes the sense organ 'such as it itself actually is'".[96] He argues that, when Aristotle says that "if we are to see that which sees, that which sees originally must be coloured" (*DA* 425b 18-19), 'that which sees' is the sense organ. Slakey goes on to conclude that for Aristotle perception, which 'is an effect on the soul', is also 'an event in the sense organs'.[97] This view is endorsed by Sorabji.[98]

Barnes is not satisfied with such a strong physicalist account of perception.[99] By focusing on Aristotle's frequent claim of the non-separability of soul and body (403a 3-b 19; 413a 3-b 6), he ascribes the title of 'weak physicalism' to Aristotle.[100] "Barnes' view is a form of materialism because it commits Aristotle to the position that all psychic states are also material states; it is *weak* because it does not entail that every mental-state type (being-ψ) is identical with some physical-state type (being-φ), and thus allows that mental states

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[95] For a reference to a materialist account of Aristotle's hylomorphism, see Shields (1988, n. 1).
[96] Slakey (1961), pp. 75-89, see esp. p. 79.
[97] Slakey (1961), p. 87.
[98] Sorabji (1974), esp. p. 53 ff.
[99] Barnes (1971-2), pp. 32-41.
[100] Barnes (1971-2, p. 34) defines 'physical' as 'definable in terms of the primitive predicates of physics (and, if necessary, of chemistry; and, if necessary, of biology)'.

can be realized by a variety of distinct physical states."[101] Barnes's position might well be associated with what we call functionalism which argues for the compositional plasticity (or multiple realisability) of the soul over the body, i.e. which denies any essential, identical, connection between them. Functionalists do not necessarily commit themselves to materialism.[102] Nonetheless, in construing Aristotle's hylomorphism, Nussbaum and Putnam, for example, ascribe the materialist account to Aristotle by saying that perception is always accompanied by 'some material transition'.[103] We shall return to examine the functionalist position in more detail.

On the other hand, against the Nussbaum-Putnam's position Burnyeat argues that for Aristotle sense-perception is to become *aware of* sensible qualities, without involving 'a literal physiological change of quality in the organ'.[104] If Burnyeat is right, there is no doubt that Aristotle's hylomorphism has no feature resembling the Cartesian interaction between the soul and the body. Moreover, he claims not only (i) that the seeing of 'red' is not the eye's actually becoming red and (ii) that there is no necessity of any physiological change in the eye in seeing, but also (iii) that sense-perception does not require any associated physiological change at all even in other parts of the body.[105] Thus his claim indeed

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[101] Shields (1993), p. 162.

[102] They argue that in so far as the mental states play the functional roles attributed to them, it does not matter whether their physical or ontological bases are copper, cheese, or soul (Putnam, 1975, p. 135). Thus, although many functionalists are materialists, "functionalism *per se* does not entail materialism" because there is no logical necessity that mental states should be physical states, i.e. the ontological basis of mental realisation may not be material (Priest, 1991, pp. 133-134).

[103] Nussbaum and Putnam (1992), esp. p. 37.

[104] Burnyeat (1992, p. 19 ff.) analyses the widely discussed passage at *DA* II. 12, 424a 17-24 where Aristotle says that "receiving the form of something without its matter means becoming like it in form but not becoming like it in matter".

[105] However, Burnyeat's discussion is focused on (ii) which does not necessarily entail (iii). Thus Nussbaum and Putnam (1992, p. 36 ff.; esp. pp. 53-54), who maintain (iii), argue that their position is safe from his criticism. This point is well illustrated by Cohen (1992, pp. 63-64). See also below for more on Burnyeat's position.

threatens every interpretation that allows for the occurrence of any physiological change in the exercise of the capacity for sense-perception.[106]

As we have so far seen, the questions arising for Aristotle's hylomorphism are these: (1) whether the soul and the body are two distinct substances and, if not, (2) whether any physiological changes are necessarily involved in psychological activities. In order to determine our position, let us first take a closer look at the functionalist position.

(*c*) *Functionalism*

Functionalism is in general understood as the view that being in a mental state is being in a functional state which bears causal relations "to (1) environmental effects on the body, (2) other types of mental states, and (3) bodily behavior".[107] In other words, functionalists understand mental states in terms of their causal relations to inputs, other mental states, and outputs. In applying the functionalist account of causal relations 'from (1) the inputs to (3) the outputs via (2) other mental states' to Aristotle's theory of self-motion, we might understand (1) as sense-perception and (3) as animal locomotion. Moreover, as we shall see in close detail in Chapters III and IV, Aristotle thinks that animal locomotion is the product of the relation between an animal's perceiving the external object and other psychological activities, i.e. (2) above, such as *orexis*, *phantasia*, etc. Thus, at first glance, it appears that there is a resemblance between functionalism and Aristotle's account of locomotion.

However, we need to examine at least four questions in accepting the functionalist interpretation as the right one for Aristotle's hylomorphism: whether Aristotle would accept (i) that such a functionalist account, i.e. the process from (1) to (3) via (2), is also applicable

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[106] Cohen (1992), p. 57.
[107] Churchland (1984), p. 36.

to other types of motion of the living being, (ii) that their relationships are causal, (iii) that all the psychological activities are necessarily enmattered or embodied, and (iv) that the particular type of embodiment is contingent. The functionalist interpretation of Aristotle fails, if there is a negative answer to any of those questions.[108] In the present chapter, I shall be chiefly concerned with showing the outcome of a negative answer to the last question.[109]

For the majority of functionalists, mental activities are in fact functional states of *some sort* of matter. They generally accept the claim that there must be some physical or physiological basis in which mental states are realised, but refuse to accept that the basis must be always the same for a particular *type* of mental state. The functionalist account is thus based on the claim that the relation of mental states to particular types of physical states is only contingent and there is no essential connection between them.[110] In this way, as mentioned earlier, it claims the compositional plasticity (or multiple realisability) of mental states over physical states.

This compositional plasticity leads to the token identity theory, the view that every instance of a mental state is identical with an instance of some type of physical state but not necessarily a particular type of physical state. In principle, the identity theory in general fails if we 'find some property that is true of brain states, but not of mental states (or vice versa)'.[111] The compositional plasticity does not entail the type-type identity thesis that a particular mental-state type at t_1 will be always realised in this particular physical-state type

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[108] I mentioned earlier (see note 102) that functionalism is not necessarily committed to materialism. However, it ascribes (iii) to Aristotle with respect to his psychology.

[109] Note that (iv) implicitly presupposes that the answer to (iii) is positive. That is, in so far as it is granted that the soul is necessarily embodied, we can ask whether the relation between soul and body is contingent or essential. (iii) will be briefly dealt with in Chapter V. See Modrak (1987, pp. 28-29) who offers negative answers to the questions (i), (ii), and (iii). Since she denies (iii), she does not need to consider question (iv).

[110] Nussbaum (1978), e.g. p. 147 ff.; Nussbaum and Putnam (1992), p. 33 ff.; Cohen (1992), pp. 58-59.

[111] Churchland (1984), pp. 29-30.

in which it was realised at t_1. Thus, according to the functionalist, a firing of C-fibres in Jones's brain at t_1, for instance, is his pain at t_1, but such a firing may or may not be identified with his pain at t_2 and also the way of their firing may be different at different times; i.e. the same mental state can be multiply realisable in different sorts of matter or in different ways in the same matter.[112]

If, unlike Burnyeat who maintains that for Aristotle sense-perception is not necessarily accompanied by any physiological change, one is to claim that Aristotle maintains that psychological activities always involve physiological changes, one has to find a way to account for his anti-reductionism. For, as is generally granted, Aristotle was never a strong materialist who claims that each type of the psychological states is reducible to some type of the physiological states.[113] For this reason, Nussbaum and Putnam devote more than one third of their article 'Changing Aristotle's Mind' to justifying their position about the compositional plasticity of the soul in Aristotle's hylomorphism.[114] They think that Aristotle maintains that "The same activity can be realized in such a variety of specific materials that there is not likely to be *one* thing that is just what perceiving red *is*, on the material level."[115] In this way, they claim that Aristotle does not commit himself to reductionism.[116] However, it is still questionable whether this really represents Aristotle's own position.

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[112] Cf. Boyd's distinction between compositional plasticity and configurational plasticity (1980, p. 87 ff.).

[113] For instance, his anti-reductive attitude might well be exemplified by his criticism of Empedocles who holds that the motion *per se* of plants or earth can be explained by the analysis of their material components (*DA* 415a 28-416a 18).

[114] Nussbaum and Putnam (1992), pp. 35-46.

[115] Nussbaum and Putnam (1992), p. 32. Note that whether functionalism evades the commitment to the ontological reductionism is controversial (see Burnyeat, 1992, p. 22 ff.; Kim, 1989, pp. 242-260). However, the point here is that one of the reasons for the functionalist interpretation of Aristotle is to show that he was not an ontological reductionist or a type-type identity theorist (see e.g. Nussbaum and Putnam, 1992, pp. 32-35; p. 37; pp. 40-41).

[116] Nussbaum and Putnam (1992), p. 45 ff. Cf. Code and Moravcsik (1992), pp. 141-143.

II. 2 *How to Read Aristotle's Hylomorphism?*

At this stage, we need to note that the functionalist claim about the contingent relationship between the soul and the body results from the dismissal of Aristotle's frequent emphasis on the close unity of the soul and the body in the living being's motion. In the *DA*, Aristotle appears to be more interested in the psychological aspect of the living being than its material or physiological aspect. However, this is understandable because the *DA* is the place where he studies the soul or the psychological aspect of the living being. However, even in the same treatise Aristotle at times warns us that the physiological aspect should not be ignored.[117]

In what follows, I shall examine some of Aristotle's own passages that the functionalist reads in her favour and the validity of the functionalist ascription of compositional plasticity to Aristotle. And then I shall go on to examine whether there is any alternative reading of Aristotle's hylomorphism and, if so, what it is.

(*a*) *Aristotle's Functionalism?*

Aristotle's hylomorphic distinction between form and matter is first introduced when he argues in *Ph.* I. 9 against the Parmenidean denial of the possibility of change. He thinks that the Parmenidean fallacy originally derives from the failure to see that 'one' as well as 'being' has more than one meaning.[118] As a result, Aristotle argues, Parmenides was unable to distinguish a substance from its accidents.[119] Accidents may or may not belong to a particular subject; that is, they are contingent. This account can be illustrated by Aristotle's familiar example of a man becoming musical from being unmusical discussed in *Ph.* I. 7. In

[117] Cf. *DA* 403a 3 ff.; 407b 14 ff.; 412b 10-413a 9.
[118] See *Ph.* 185a 21 ff.; 186a 22 ff.; *Met.* Book X.
[119] *Ph.* 185a 29 ff.; 186a 33 ff.; cf. 188a 5 ff.

such a case, the unmusical man's becoming musical is accidental in the sense that the man *qua* man may never be musical throughout his whole life. Thus the man may become musical or remain unmusical. Moreover, the man may decide to learn mathematics instead of music and become a mathematician rather than a musician. Consider also an artefact, for example, a bronze statue. An artisan may decide to make a chair or a sword, rather than a statue, out of a piece of bronze. Bronze has its attributes: it will melt or harden at a certain temperature, it will keep its shape when it is solid, and the like. These are the conditions that the artisan considers in deciding to make a certain artefact out of it. However, whether he decides to make a chair or a sphere is merely a contingent fact, so is whether he uses wood or plastic as a material.[120] Does Aristotle think that the soul-body distinction of the living being is merely another case of a bronze sphere or a musical man?

The same sort of question might arise from the reading of the following passage where Aristotle explains his conception of the soul in terms of form and actuality:

> We say that substance is one kind of what is, and that in several senses: in the sense of matter or that which is in itself is not a this, and in the sense of form or essence, which is that precisely in virtue of which a thing is called a this, and thirdly in the sense of that which is compounded of both. Now matter is potentiality, form actuality; and actuality is of two kinds, one as e.g. knowledge, the other as e.g. reflecting. (*DA* 412a 6-11)

Aristotle here identifies soul and body, respectively, with form and matter and, also, with actuality and potentiality. For him, the soul is 'a substance in the sense of the form of a natural body having life potentially within it' (412a 20-21). However, we need to note that Aristotle has in mind two distinct types of actuality, knowledge and reflection (or contemplation). He later states that the soul is analogous to knowledge rather than to contemplation.

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[120] Cf. Burnyeat (1992), pp. 17-19.

It is obvious that the soul is an actuality like knowledge; for both sleeping and waking presuppose the existence of soul, and of these waking corresponds to reflecting, sleeping to knowledge possessed but not employed, and knowledge of something is temporally prior. (412a 23-26; cf. *Ph.* 255a 30 ff.)

What does he mean by saying that "the soul is an actuality like knowledge"? Hamlyn interprets that Aristotle is here making a distinction between 'actuality (=*hexis*, like knowledge, a disposition) and actuality (=*energeia*, like contemplation or the exercise of knowledge, an activity)' that 'are both spoken of *as actuality*'.[121] If so, Aristotle's description of the soul as the first actuality, i.e. knowledge, seems to be what is to be actualised as the second actuality, i.e. contemplation. Then the soul is in a sense a potentiality. However, since it is matter that is said to be a potentiality, it must involve matter. When the embodied soul exercises its capacity, it is the second actuality like contemplation, whereas the embodied soul is a potentiality to exercise, which Aristotle calls the first actuality.

We need not be alarmed by Aristotle's treatment of the embodied soul, i.e. form plus matter, as a potentiality to be actualised as the second actuality. As noted, for Aristotle change is between contraries, i.e. form and privation, which presuppose the existence of the substratum, i.e. matter. A man becomes musical from unmusical, an apple becomes red from green, etc. In these cases, 'the man and the apple' are the substrata, 'unmusical and green' are privations, and 'musical and red' are forms to be acquired. When Aristotle says that matter is a potentiality, he means that the matter tends to actualise a potentiality that it already has. In other words, the matter already has a certain form that can be replaced with another.[122] All the same, when Aristotle says that the soul is the first actuality (or the

[121] Hamlyn (1993), note on 412a 22.

[122] Bostock (1994, note on 1033a 31-b 2) agrees that in talking about matter (e.g. bronze) as an underlying subject that receives the shape of sphere, Aristotle seems to regard it as a compound of form and matter rather than matter without any form. See also Ross (1924), note on 1033a 31; Charlton (1970), pp. 71-72.

potentiality like knowledge) to be actualised as contemplation, it might well be construed as entailing a compound of form and matter rather than the soul alone. The question is then whether Aristotle would acknowledge that knowledge is something that *can be* actualised from another potentiality. To put the question differently, would he say that the soul can be embodied in some matter for the reason that the matter has the structure, the shape, the function, etc. that, for instance, a human being would have?

According to the functionalist, Aristotle would. Even further, the functionalist claims that he would acknowledge that the soul can be embodied even in cheese in so far as it is the sort of matter that can display the appropriate functions. However, most of the passages, if not all, the functionalist takes to support to her view leave room for another line of interpretation. The following passage might be taken to support the functionalist view that claims that for Aristotle matter must be in a certain functional state.

> E.g. is earth potentially a man? No—but rather when it has already become *seed*, and perhaps not even then, as not everything can be healed by the medical art or by chance, but there is a certain kind of thing which is capable of it, and only this is potentially healthy (*Met.* 1049a 2-5).

Elsewhere, Aristotle distinguishes a potentiality from a mere possibility (1019b 22 ff.; 1047b 3-30). When the opposite of some happening is not necessarily true, then the happening is said to be possible. In contrast, a potentiality is that which may or may not be actualised, but there is nothing impossible in its actualisation (1047a 21-29; cf. 1049a 5 ff.). In the above passage, Aristotle goes on to say that it is not any matter, but the sort of matter that has a specific and appropriate potentiality that is actualised by a specific form. However, does he thereby conceive that a man can be actualised in some matter other than the sort of matter that the man in fact displays? The passage is obscure on its own since, although it might be construed as entailing that there must be the sort of matter in which a man can be

actualised, it does not clearly say whether the man can only be actualised in that matter. In effect, Aristotle hardly seems to be keen on making a distinction between the two implications.

Let us briefly examine Aristotle's discussion of essence (τὸ τί ἦν εἶναι) since the question whether the man can be actualised only in a particular sort of matter is tantamount to asking whether the man's essence can be acquired. As seen earlier in Ch. I. Sec. 1(c), Aristotle thinks that nature is not an accidental attribute such as a shape or a quality; rather it is the form in the sense of essence by which we determine what a thing is. The soul is also a different kind of nature which he takes to be the essence of the living being, as we saw in the *DA* passage cited above (412a 6-11). In a discussion of essence in *Met.* VII, Aristotle says,

> It is clear, then, that neither does the form—or whatever one should call the shape of a perceptible thing—itself come into being or undergo generation, nor does the what-being-is. (Rather this is what comes to be in something else, either by nature or by skill or by some capacity.) There being a bronzen sphere is something that is produced; it is produced from bronze and sphere, by introducing the form into the bronze so that the result is a bronzen sphere. (1033b 5-11. trans. Bostock)

This passage is, however, difficult to understand. For Aristotle seems to say, on the one hand, that the essence cannot be produced and, on the other, that, as the bronze sphere is produced by an artisan, essences of beings are also produced 'either by nature or by skill or by some capacity'.

In relation to this view, we have to examine the so-called homonymy principle, viz. the principle by which Aristotle claims that a body which is incapable of its supposed function is not a body, which implies that for him a body is a living body, i.e. a compound of soul and body. He refers to this principle on many occasions,[123] one of which reads as follows:

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[123] *Meteo.* 390a 10-17; *DA* 412b 12-24; 412b 27-413a 2; *GA* 734b 19 ff.; *Met.* 1035b 23-25; 1036b 31-33.

What a thing is is always determined by its function: a thing really is itself when it can perform its function; an eye, for example, when it can see. When a thing cannot do so it is that thing only in name, like a dead eye or one made of stone, just as a wooden saw is no more a saw than one in a picture. The same, then, is true of flesh, except that its function is less clear than that of the tongue. So, too, with fire, but its function is perhaps even harder to specify by physical inquiry than that of flesh. (*Meteo.* IV. 12, 390a 10-17)

Aristotle thinks that if a body is not capable of its proper psychological activities, it is a body only in name. Thus severed parts of the living being, e.g. arms or legs are no longer arms or legs in Aristotle's sense. Since the living being displays its psychological activities or functions in virtue of a soul presupposing a body as its ontological basis, we can take the above passage to imply that neither can there be a body without a soul nor can there be a soul without a body. Moreover, there cannot be parts without a whole body and, also, there cannot be a whole body without parts (cf. *Met.* 1034b 20 ff.). This account of bodily parts secures Aristotle's view of the inseparability of the soul from the body and also the converse. He thus concludes that it is unnecessary to question "whether the soul and the body are one" (*DA* 412b 5-6; 413a 4-6).

However, a functionalist such as Shields takes the above passage to entail that "whatever—and only whatever—has the functional role of seeing will be an eye".[124] Shields thus understands Aristotle's remark that "if the old man could recover the proper kind of eye, he would see just as well as the young man ..." (408b 21 ff.), as allowing "in principle that one could gradually replace bodily parts the functional role assigned to those parts at will with others of the right sort, viz. ones capable of performing the functional role assigned to those parts, and still end up with a functioning human being".[125] Aristotle's description of 'the proper kind of eye' is indeed obscure and so is the status or

[124] Shields (1990), p. 21.
[125] Shields (1990), p. 21.

characteristics of its material components. However, these facts do not at once support the claim that Aristotle believed in the compositional plasticity of the soul. Shields quotes a passage from the *Met.* and argues for the compositional plasticity of human beings. I quote from him below.

> In those cases where things appear realized in [materials] differing in kind, e.g., a circle in bronze or stone or wood, it seems to be clear that none of these, the bronze or the stone, belongs to the essence of the circle, because it is separated from them; but in those cases which are not seen separated, nothing hinders them from being similar to these, [viz. circles]; just as if circles were always seen to be brazen, nonetheless bronze would not belong to the form [of circle], but it would be difficult to abstract this in thought. For example, the form of man always appears in flesh and bones and these sorts of parts: are these, therefore, parts of the form and account [of man]? No, they are but matter, but because [man is not seen] coming to be in other [materials], we are not able to separate them. (1036a 31-b 7)[126]

Shields thinks that Aristotle is here arguing that "despite the fact that we always see human beings realized in flesh and blood, "nothing hinders" their being realized in other ways". However, another interpretation is possible for the passage. It would say: Aristotle undoubtedly admits that certain forms, e.g. circles, can be actualised in various materials, whereas he maintains at the same time that the form of man cannot be actualised in any other material than flesh and bones only because he does not see any other case. In this vein, Code and Moravcsik argue that "the example [of man] is given in the contexts of presenting an *aporia*, Aristotle is not here speaking in his own voice".[127]

Aristotle maintains that body parts are all subservient to a certain purpose, e.g. nutrition (*Juv.* 468a 18-22; 469a 4-9). Thus severed body parts that do not function at all for the living being are no longer considered to be its parts. Moreover, as the body stops being a body in Aristotle's sense when the living being is dead, the soul of the living being stops its

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[126] Shields (1990), pp. 22-23

[127] Code and Moravcsik (1992), p. 134.

function when the body is destroyed, just as getting old restricts a man's capacity (*DA* 408b 18 ff.). For the living bodies to perform their living activities, they must have souls. And these souls must be embodied in particular bodies. In refuting his predecessors' views on the characterisation of the soul, Aristotle writes,

> ... they all join the soul to a body, or place it in a body, without adding any specification of the reason of their union, or of the bodily conditions required for it. Yet such explanation can scarcely be omitted; for some community of nature is presupposed by the fact that the one acts and the other is acted upon, the one moves and the other is moved; but it is not the case that *any* two things are related to one another in these ways. All, however, that these thinkers do is to describe the specific characteristics of the soul; they do not try to determine anything about the body which is to contain it, as if it were possible, as in the Pythagorean myths, that any soul could be clothed in any body—an absurd view, for each body seems to have a form and shape of its own. (407b 15-24)

The functionalist might want to argue that Aristotle's rejection here is not that the form of man can be actualised in a specific sort of body which functionally resembles e.g. flesh and bones, but that it can be actualised in 'any sort of body'.[128] The functionalist qualifies the sort of matter or body in which the soul can be actualised; that is, the matter in which the animal soul can be actualised should be capable of exercising a necessary function as flesh and bones do. However, the anti-functionalist can argue that Aristotle's emphasis on the function of such body parts is based on the presupposition that living beings necessarily involve their essential matter without which they cannot perform their supposed function. In this way, the above passage might well be taken to be the place where Aristotle explicitly rejects the Pythagorean claim of the compositional plasticity of the soul.

What is important to note here is that the functionalist interpretation is possible because Aristotle's contexts leave room for such an interpretation, not because it is the only possible

[128] E.g. Nussbaum and Putnam (1992), p. 55.

interpretation of them. This means that, as we saw, a counter interpretation is also possible. Let us now take a closer look at how the anti-functionalist interpretation can be formulated.

(*b*) *The Unity of the Soul and the Body*

In *Ph.* VIII. 5, Aristotle denies that a self-mover moves itself as a whole. He writes,

> If one the other hand the whole is moved by itself as a whole, it must be accidentally that the parts move themselves; and therefore their self-motion not being necessary, we may take the case of their not being moved by themselves. Therefore in the whole of the thing we may distinguish that which imparts motion without itself being moved and that which is moved; for only in this way is it possible for a thing to be self-moved. Further, if the whole moves itself we may distinguish in it that which imparts the motion and that which is moved: so while we say that AB is moved by itself, we may also say that it is moved by A. (257b 34-258a 5)

The above passage is based on, at least, two of Aristotle's previous claims; firstly, since for Aristotle what is 'continuous and naturally unified', i.e. earth, fire, etc., cannot move itself (255a 10 ff.), what moves itself refers to those that have internal parts. Secondly, there cannot be anything that has magnitude and moves itself without being moved by something else. In effect, this second point is related to the principle we examined earlier that everything that moves must be moved by something. However, as we see in the case of unmoved movers, the principle is not applicable to those that have no magnitude (267b 18 ff.). Thus self-motion is, of course, the motion of the self-mover as a whole, but the self-mover must have parts. And it does not start motion *ex nihilo* since it certainly has magnitude; it must be moved by something. In effect, it is undeniable that talking about the relation between the unmoved moving part and the moved part that brings about motion gives the impression that they are somehow separated from each other. However, since the soul itself is not a body, it must be somehow dependent on the material body in order to

bring about motion,[129] though it is not yet clear in what way it brings it about in the body (cf. *DA* 406a 12 ff.). What is clear here is that Aristotle acknowledges that there is a close relationship between the soul and the body.

On many occasions, Aristotle clearly appears to think that a living being is such because its soul is embodied or its body is ensouled. That is, his conception of 'body' is not the shape of a body, but a living body that functions in a proper way. However, it is important to note that in the case of living beings "Aristotle treats psychological activity as requiring definable structures, but does not hold that the elements that enter into the specification of the form and structure are properties, features, powers, or relations that belong to matter that can exist outside of the realization of some enlivening potential".[130] The soul is not something that can be obtained, unlike such things as shapes, arrangements, qualities, etc., but something that is inherent in or inseparable from the body.[131] The soul already resides in the body and the body is already alive. It is not the case that the body may or may not have the soul. If it were, then the body without the capacity for psychological activities would be the substratum and having the capacity is a form that can be achieved. However, for Aristotle, the soul is the principle of life which primarily means the capacity for self-nutrition, growth and decay (*DA* 412a 14). That is, he is concerned with living beings that are already alive. Again, for him, the body with the soul, i.e. the living being as a whole, is the substratum, and 'exercising' and 'not exercising' are its form and privation, respectively. That is, the privation they have is not 'that they are not alive' or 'that they do not possess

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[129] *DA* 414a 19-21; 412a 19 ff.; cf. 414a 19-21; 412a 19 ff.

[130] Code and Moravcsik (1992), p. 133. This view is derived from Aristotle's thought that the man's capacity to perform psychological activities in a certain way is the reason for his having the shape, the organs etc. See Furley (1996), pp. 59-79. For Aristotle, a body without the necessary psychological capacities is not a body at all (see the discussion of the homonymy principle above).

[131] Lloyd (1992) agrees that Aristotle maintains two theories of material elements, one for the living being and the other for the artefact (p. 59), but points out the problems raised in relation to his position (esp. pp. 64-65).

the capacity or function', but 'that they might not yet exercise their capacity to function in a certain way that they *already* have in virtue of the soul'. If the capacity to be alive is the first potentiality for the living being (which Aristotle does not at all think of), the capacity to exercise, though not actually exercising at the moment, seems to be the second potentiality which he calls the first actuality of a natural body (412a 27 ff.).

> If we consider the majority of them [affections], there seems to be no case in which the soul can act or be acted upon without involving the body; e.g. anger, courage, appetite, and sensation generally. ... It seems that all the affections of soul involve a body—passion, gentleness, fear, pity, courage, joy, loving, and hating; in all these there is a concurrent affection of the body. In support of this we may point to the fact that, while sometimes on the occasion of violent and striking occurrences there is no excitement or fear felt, on others faint and feeble stimulations produce their emotions, viz. *when the body is already in a state of tension resembling its condition when we are angry.* Here is a still clearer case: in the absence of any external cause of terror we find ourselves experiencing the feelings of a man in terror. From all this it is obvious that the affections of soul are enmattered accounts. (403a 5-25; cf. 408b 1 ff. Italics are mine.)

Aristotle here says that anger, for instance, "should be defined as a certain mode of movement of such and such a body (or part or faculty of a body) by this or that cause and for this or that end" (403a 26-28). In other words, he is saying that affections should be accounted for as soul and body *as a whole* steering towards the same end (430a 26-26; b 8); it is not the doing of the soul or the doing of the body alone. Thus the soul and the body form an organic body that is essentially alive, and neither of them survives each other.[132] Whatever the soul does, it does with the body and, all the same, whatever the body does, it does with the soul. In this way, they are the soul and the body *of* a living organism. However, he warns us that such an expression as 'the man pities, learns, and the like with the soul' (see 408b 13-18) is to be distinguished from saying that the soul itself is bodily or has a magnitude (cf. 407a 10 ff.).

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[132] Cf. Irwin (1991), pp. 69-70.

Burnyeat claims that "To be truly Aristotelian, we would have to stop believing that the emergence of life or mind requires explanation".[133] What he is saying here is that Aristotle does not separate the doings of the soul from the doings of the body because for him the material of which the sense organ is composed is essentially alive and so essentially capable of awareness.[134] Burnyeat believes that the functionalist claim about the contingent relationship of soul and body is due to the tendency to distinguish them in Cartesian sense.[135] It is unnecessary to say that, if the body or the matter that composes the living being is, as Aristotle thinks, essentially alive, then we need not talk about the relationship between the soul and the body or between the psychological and the physiological.

However, as we saw,[136] Aristotle does talk about the relationship between them in terms of the unmoved moving part and the moved part as if they were separate from each other. They move as a whole, but this does not entail that the whole does not, or cannot, display two distinct activities. As shown earlier, Aristotle certainly acknowledges two characteristically distinct activities i.e. one psychological and the other physiological in the case of anger, for instance. Moreover, we have to note that it is one thing to say that the sense organ does not undergo any change or that there is no change *in the sense organ*, quite another to say that there occurs no physiological change at all in psychological activities.[137] For there might still be a physiological change in some other body parts. That is to say, even if Burnyeat is right in claiming that sense-perception does not involve any physiological change in the sense organ, it does not follow that it does not involve any physiological change at all even in other bodily organs.[138] I shall not discuss whether there

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[133] Burnyeat (1992), p. 26.
[134] Cf. M. Frede (1992), esp. pp. 96-97; Code and Moravcsik (1992), pp. 130-131.
[135] Burnyeat (1992), p. 16; p. 26.
[136] See also Ch. I. Sec. 2 (*a*).
[137] Cf. Nussbaum and Putnam (1992), p. 36.
[138] See note 105.

is any physiological change in the sense organ in sense-perception as a single psychological activity, since I do not believe that the animal's capacity for perception is for the sake of perceiving in its own right without reference to such capacities for *orexis*, locomotion, etc.[139] However, our discussion of the role of *pneuma* in animal locomotion in Ch. V. Sec. 2 will show that there is no doubt that some material change is required for the psychological activities involved in the arousal of locomotion..

Since it is a fact that the shape of the sphere might be impressed on bronze, mud, plastic, and so on by an artisan, Aristotle might differentiate the case of artefacts from that of living beings. That is, in the case of a bronze sphere the relation between bronze and the shape of the sphere is contingent, whereas the relation between soul and body is not.[140] The point here is that Aristotle's treatment of the soul-body relationship is essential. Aristotle at times says that "different elements compose different things" (*Met.* 1070b 16-17; 26-27) or that "different causes and principles are found in different things" (1070a 31; b 27; *Ph.* 194b 9). However, in saying this, he does not mean that there is an indefinite number of elements that compose beings. In *GC* II. 8, Aristotle explicitly tells us that all sublunary beings are composed of the four elements (i.e. the simple bodies) (334b 31 ff.), but in different proportions. Thus there come to be different beings whose properties might be different from those of the elements (328a 6 ff.). However, Aristotle has no doubt that their properties ultimately result from the interrelation of the elements that have their own natures within themselves (334b 16-30; cf. 333b 17-18).

In the *GC*, Aristotle does not appear to have the conception of the *sumphuton pneuma* (i.e. the inborn air) in mind yet, but explains that flesh and bones are also composed of the

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[139] See Ch. III. Sec. 2 (*c*).

[140] Cf. *Met.* 1036b 22-24: "to bring all things thus to Forms and to eliminate the matter is useless labour; for some things surely are a particular form in a particular matter, or particular things in a particular state."

four elements (334a 20 ff.).[141] As we saw in Ch. I. Sec. 1, he distinguishes the living being from the non-living being by ascribing to the former a nature (to exercise two-way motion) that is different in character from that of the latter (to exercise one-way motion). Although he does make an analogy between the artefact and the living being (e.g. *DA* 412b 12 ff.), it now seems that the proper analogy should be between 'form and matter of the simple bodies' and 'soul and body of the living being'. If so, the reason for Aristotle's use of the artefact instead of a simple body might be that the form-matter distinction can be more clearly shown in the artefact. We shall return to this topic in Ch. V in the discussion of *pneuma*.

(*c*) *Aristotle's Conception of Causes*

Cohen, on one occasion, states that "The success of the functionalist interpretation seems to me to depend on whether the apparent role of *psuche* as efficient cause can be satisfactorily explained away. I am not convinced it can be. ..."[142] However, the anti-functionalist faces the same problem. Indeed, those who deny the dualist position all have to deal with it.

Aristotle clearly and repeatedly says that the soul is that which originates motion in the 'living body' (e.g. *DA* 408b 6-7; 415b 9 ff.). In particular, in *DA* II. 4, he considers the soul as a cause (*aition*) in three senses, i.e. the essence of the whole living body, the source of movement, and the for-the-sake-of-which (respectively, the formal, the efficient, and the final cause) (415b 12 ff.). As indicated, the soul alone is not capable of actualising any capacity and so it uses bodily organs by residing in it as the 'instruments for the realisation'

[141] However, as we shall see in Ch. V. Sec. 2, he involves *pneuma* in explaining their composition.
[142] Cohen (1992), p. 72.

of the capacity (415b 18).[143] Thus, even if the soul is said to be the capacities of nutrition, growth, sense-perception, etc., these are merely static or ineffective capacities (in the sense that it will never realise them) without the body by which it realises them.[144] In effect, there would not even be a static perception, for instance, without the sense organs. Such a soul without involving a body is not even thinkable for Aristotle.

Let us now turn to Aristotle's own discussion of different senses of the soul being the cause of the body in *DA* II. 4. I quote the relevant passage at length.

> The soul is the cause or source of the living body. The terms cause and source have many senses. But the soul is the cause of its body alike in all three senses which we explicitly recognize. It is the source of motion, it is the end, it is the essence of the whole living body. (i) That it is the last, is clear; for in everything the essence is identical with the cause of its being, and here, in the case of living things, their being is to live, and of their being and their living the soul in them is the cause or source. Further, the actuality of whatever is potential is identical with its account. (ii) It is manifest that the soul is also the final cause. For nature, like thought, always does whatever it does for the sake of something, which something is its end. To that something corresponds in the case of animals the soul and in this it follows the order of nature; all natural bodies are organs of the soul. This is true of those that enter into the constitution of plants as well as of those which enter into that of animals. This shows that that for the sake of which they are is soul. That for the sake of which has two senses, viz. the end to achieve which, and the being in whose interest, anything is or is done. (iii) The soul is also the cause of the living body as the original source of local movement. The power of locomotion is not found, however, in all living things. But change of quality and change of quantity are also due to the soul. Sensation is held to be a qualitative alteration, and nothing except what has soul in it is capable of sensation. The same holds of growth and decay; nothing grows or decays naturally except what feeds itself, and nothing feeds itself except what has a share of life in it. (415b 9-27; Numbers and emphases are mine. Cf. *Met.* 1013a 24-36; *Ph.* 194b 24-195a 2)

As the underlined phrases show, Aristotle frequently emphasises that the soul is not the cause of a corpse, but of a living body. That is, the relationship of the soul with the body primarily signifies a living body (cf. *Ph.* 195a 11-14). On the other hand, although Aristotle does not explicitly offer any account of the material cause in the above passage, it seems

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[143] Hicks' note on 415b 18.
[144] Cf. Annas (1982), p. 321.

clear that he wants to explain the activities of living beings in terms of the four types of *aition* including the material cause (cf. *DA* 415b 18).[145] For a living being is not simply to be identified with the soul, but also involves a body.[146]

In the above passage, Aristotle says that the soul is the formal cause in the sense that it is that in virtue of which the living being has various capacities necessary for the actualisation of its essence, i.e. its being and living. The soul is also the final cause in virtue of which the living being acts for 'for-the-sake-of-which', i.e. the good end. Considering that the end that the living being pursues is ultimately its survival or living well, the formal and the final causes appear to coincide (cf. *Ph.* 198a 25-26). What about the soul as the efficient cause? Does it also coincide with others? Presumably, the answer is yes. Living beings move around with some purpose. They do have looking for food as their end since getting nutrition from food is necessary for their survival. It then seems that the different senses of cause are all related to the ultimate end, i.e. survival or life. Furley claims that 'the material, formal, and final causes' are 'different aspects of the efficient cause, or perhaps different kinds of efficient cause'.[147] He says,

> The well-adapted beak is a *cause* (an efficient cause) of the production of the next generation, and it is so for no other reason than that it is an effective way of achieving the goal of getting the food necessary for survival. If we say that hawks as a class have curved beaks *for the sake of* catching and tearing up rodents, it is in this way that we must explicate the idea. As in the case of intentional action, this is to make the final cause into an aspect of the efficient cause.[148]

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[145] Cf. Moravcsik (1974), p. 11; (1975), p. 632; (1991), p. 35.

[146] We cannot explain animal motion without presupposing the involvement of the material body (see *GC* 324b 4 ff.). Nor can we explain arms and legs without matter. It is also to be noted that of the different senses of *aition* Aristotle's account of the soul as the source of motion (the efficient cause) shows that the soul is the source not only of locomotion, but also of other motions such as quantitative motion and qualitative motion. On the other hand, Aristotle's description of 'the source of motion' must not be understood as the efficient cause in the modern sense. See e.g. Moravcsik (1974), p. 9; (1991), p. 35.

[147] Furley (1996), p. 62.

[148] Furley (1996), p. 70.

However, Aristotle directly rejects this idea of regarding the final cause as a kind of efficient cause in *GC* I. 7.

The active power is a cause in the sense of that from which the process originates; but the end, for the sake of which it takes place, is not active.[149] (That is why *health* is not active, except metaphorically.) For when the agent is there, the patient *becomes* something; but when states are there, the patient no longer *becomes* but already *is*—and forms (i.e. ends) are a kind of state. (324b 13-18)

Aristotle is saying that the end cannot be an active cause. He is presumably thinking that the end as such does not bring about any motion, if there is no cause in the sense of the source of motion. As Aristotle says, the soul is not composed of different causes, but it is one and the same cause viewed from different aspects or said in different ways (cf. *DA* 415b 9-10; *Ph.* 198a 25 ff.).[150] Nonetheless, Aristotle does consider the hierarchy or order among the different senses of cause in an account of generation in *PA* I. 1 and claims that the final cause is the highest in the order.

... the causes concerned in natural generation are, as we see, more than one. There is the cause for the sake of which, and the cause whence the beginning of motion comes. Now we must decide which of these two causes comes first, which second. Plainly, however, that cause is the first which we call that for the sake of which. For this is the account of the thing, and the account forms the starting-point, alike in the works of art and in works of nature. (639b 11-16)

Thus, although the causes coincide in the end, there is no reason to think, as opposed to Furely, that they are different aspects of one particular sense of cause. That is, we do not have to think that the final cause is one aspect of the efficient cause. Animal movement for food is not in virtue of the soul as the final cause, but as the source of motion, i.e. the efficient cause. Our discussion so far shows that the soul as the efficient cause is distinct

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[149] ἔστι δὲ τὸ ποιητικὸν αἴτιον ὡς ὅθεν ἡ ἀρχὴ τῆς κινήσεως. Τὸ δ' οὗ ἕνεκα οὐ ποιητικόν.

[150] Ἔστι δὲ ἡ ψυχὴ τοῦ ζῶντος σώματος αἰτία καὶ ἀρχή. Ταῦτα δὲ πολλαχῶς λέγεται. (*DA* 415b 9-10)

from the soul as the final cause. However, in what sense the soul is the efficient cause still remains obscure. What is clear is that it is not on its own a sufficient condition for the activity of the living being since such a living activity presupposes a body. As mentioned, the account of the soul as the efficient cause is not a problem only for the functionalist interpretation. Thus, in refuting that interpretation, it is not absolutely necessary to deal with the problem at this stage. I shall thus leave it for the moment. I shall return to examine what account we can offer for the role of the soul as the efficient cause in the case of locomotion, when we discuss the psychological and the physiological side of animal locomotion in detail.[151]

(*d*) *Aristotle's Anti-Reductionism*

Unlike what Cohen says above, the success of the functionalist interpretation depends on the question whether one can really show that Aristotle's conception of the soul-body relationship is contingent. As mentioned earlier, the functionalist effort to characterise the relationship as contingent is due to the admission that Aristotle was in no way a reductionist. However, minimising the relationship between soul and body is not the only way to avoid reductionism. Charles presents two possible forms of reading Aristotle as an anti-reductionist as follows:

> ... Aristotle's ground for resisting the reduction of the psychological to the physical does not rest on his belief that no relevant physical sufficient condition can be given. It depends rather on his claim that it is not possible to account for the role of psychological teleological causation on the basis of a set of physical sufficient conditions.[152]

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[151] See esp. Ch. V. Sec. 2 (*d*) (i).
[152] Charles (1988), p. 2.

Charles here makes a distinction between ontological reductionism and explanatory reductionism and claims that Aristotle rejects the latter, not the former. That is, according to him, Aristotle believes that no *account* of the sufficient physical conditions can be given for the essential features of organisms, not that there are no sufficient physical conditions in reality. Thus he reads Aristotle as an explanatory anti-reductionist and, at the same time, as an ontological reductionist. In this way, Charles takes Aristotle to be a materialist, while also ascribing to him the title of anti-reductionist.

However, Code and Moravcsik are not happy about the consequence which might lead to the functionalist interpretation of Aristotle.[153] For saying that 'there are sufficient physical states that correspond to psychological states' does not necessarily commit one to reductive materialism or the type-type identity theory. One might claim that there might be corresponding states without being identical: that is, there might be sufficient physical states that correspond to psychological states, but, nonetheless, they are not identical at the type level. The functionalist would say that what is important for Aristotle is that there is a corresponding physical state for a psychological state. It does not matter what kind of matter it may be as long as it is in the required functional state. As noted, this is indeed the basis of functionalism which denies the type-type identity theory, but which still admits of the token-token identity theory that "maintains that each *instance* of a given type of mental state is numerically identical with some specific physical state in some physical system or other".[154]

Code and Moravcsik argue that this is not the right interpretation of Aristotle.

... nature, receiving the form without matter, potentiality and actuality, matter and form ... are the concepts Aristotle utilizes in his attempts to construct his own view about how perceptual processes are both natural

[153] Code and Moravcsik (1992), pp. 129-131; pp. 141-145.
[154] Churchland (1984), p. 37.

and informative, and also about how various forms of living are parts of nature and yet crucially involve self-initiating processes. Once Aristotle's basic concerns and problems are formulated in terms of these notions, rather than in terms of sufficient physical conditions, we see Aristotle's enterprise as having aims and solutions that intersect with, but largely fall outside, the foci of the two views as formulated by Charles. Further, we think that for Aristotle the concept of matter is species-relative, and should itself be seen as including a teleological aspect—specific potentialities defined in terms of their exercise.[155]

Their claim is that the problem of reductionism does not concern Aristotle in the first place since for him what appears to be either the doings of the soul or the doings of the body are, as a matter of fact, the doings of the living being as a whole. However, even if one accepts, as we do, that the living being acts, and is acted upon, as a whole, one does not thereby need to deny that Aristotle is concerned with some sort of reductionism or anti-reductionism.

As often mentioned, Aristotle does often express his objection to the reductive account of form in terms of matter. Moreover, he also thinks that the living being's motion involves two characteristically distinct activities. For instance, in his discussion of animal locomotion in the *MA*, Aristotle attempts to give an account of psychological activities, as he also endeavours to find corresponding physiological activities. That is, he explains the arousal of locomotion in terms of sense-perception, *orexis*, *phantasia*, etc. (esp. 700b 17 ff.) and, also, tries to show that the physiological account of it is unproblematic (701b 2 ff.). For instance, he says,

> Of necessity the thought and *phantasia* of these are accompanied by heating and chilling. ... For feelings of confidence, fears, sexual excitement, and other bodily affections, painful and pleasant, are accompanied by heating or chilling, in some cases of a part, in others of the whole body. (701b 34-702a 4)

[155] Code and Moravcsik (1992), p. 143.

Whether the physiological change he mentions here is always manifested as 'heating or chilling' is subject to further discussion. However, Aristotle, in the above passage, is convinced that there is a physiological activity that accompanies a psychological activity. The two activities are different in character and so this is a good reason to raise a question whether the psychological is reducible to the physiological. If so, Aristotle might well appear to have a problem of reductionism. Thus the remaining question will be whether and how he can evade it.

Summary

The present chapter has been the place to raise questions rather than to resolve them. Although the functionalist interpretation of Aristotle's conception of the soul-body relationship has earned many supporters, we saw that there is still room for a counter interpretation.

As noted, the debate between the functionalist and the anti-functionalist is initially whether or not Aristotle acknowledges an essential connection between the soul and the body. I believe that in explaining living activities Aristotle does think that psychological activities involve physiological changes. Also I think that Aristotle holds that psychological capacities can be realised in only one sort of matter. Thus my position initially contrasts with the functionalist interpretation. Moreover, I also object to the Code-Moravcsik dismissal of Aristotle's concern with reductionism. However, the expression that Aristotle is concerned with reductionism does not mean that he is committed to reductionism; I think that he maintains an anti-reductionist position.[156]

[156] For Aristotle's anti-reductionism, see Ch. V. Sec. 2 (*d*) (ii).

Our discussion in this chapter is based on Aristotle's general remarks on the soul-body relationship, but more conclusive evidence should be given from an analysis of a more specific example of a living activity. Thus, the questions remaining unresolved here will be reviewed in Chapter V with reference to the analysis of animal locomotion. To sum up, the questions that will be further discussed are primarily whether Aristotle maintains that the soul-body relationship is essential and, if he does, how he evades the reductive commitment. Furthermore, the sense of the soul as the efficient cause must be explained away, if one is to object to the Cartesian account of Aristotle's conception of soul and body.

CHAPTER III

THE PSYCHOLOGICAL PICTURE (1): THE LOCOMOTIVE FACULTY OF THE SOUL

Aristotle has his reason for claiming that locomotion is primary among motions in the animal, as it is in the heavenly bodies. The reason he offers for its primacy in the animal is, however, neither that it is primary in time nor that it is eternal and continuous, as is said of the heavenly bodies, but that it is primary in the course of perfecting the being (κατ' οὐσίαν) and that it brings about less change in the body (esp. *Ph.* 261a 13-26). However, although he claims that locomotion is related to the perfection of being, he ascribes the capacity for locomotion not to all living beings, but only to some animals that have more capacities than others. That is, locomotion does not contribute to the perfection of all living beings. This claim seems to be derived from his conviction that the more capacities living beings have the better they exist.[157] Aristotle is well aware of the fact that what is primarily necessary for one to be alive is the capacity for nutrition. However, he notes that to be an animal is different from being a plant in the sense that it requires more than that capacity, i.e. being an animal is also to have the capacity for sense-perception, i.e. the sense of touch (ἁφή), the capacity for *orexis*, etc. (e.g. *DA* 413b 4-24). Such an animal uses all its capacities for maintaining life since it is the animal it is (434a 30 ff.) and since living is better than non-living (*GA* 731a 24-732a 11). Aristotle does not question why animals should have more capacities than plants, but accepts it as a fact and concludes that animals are better than plants (cf. *GA ibid.*).

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[157] Cf. *DA* 434b 5-7; b 22-27; 435b 20-26; *Sens.* 436b 18-437a 16.

In the *DA*, he sets out to discuss the characteristics of the soul for the reason that "The knowledge of the soul admittedly contributes greatly to the advance of truth in general, and, above all, to our understanding of Nature" (402a 5-7).[158] He defines the soul as the principle of life (ἀρχὴ τῶν ζῴων)[159] in virtue of which living beings are capable of 'self-nutrition and growth and decay'. Self-nutrition is a primary condition for beings to be alive.[160] And it is a characteristic mark that distinguishes them (including plants) from other natural beings, i.e. the simple bodies or the heavenly bodies. However, the capacity for self-nutrition is not the only one that the living being has in virtue of the soul; it also has the capacities for perceiving, desiring, thinking, and the like (413a 21 ff.).

We saw that Aristotle envisages that each faculty of the soul is that in virtue of which one group of living beings differs from another since the soul in the living being plays the role of the cause or principle (ἀιτία καὶ ἀρχή) in different senses (415b 9 ff.).[161] It is a cause in the senses of the source of motion, the end, and the essence of the whole living body, i.e. the efficient, the final, and the formal cause. In general, Aristotle thinks that a faculty of the soul is that in virtue of the living being is capable of performing an activity or a set of activities. For instance, a living being has the capacity for nutrition in virtue of the nutritive faculty, the capacity for sense-perception in virtue of the sensitive faculty, and so on.

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[158] However, strictly speaking, such knowledge contributes *partly* to the understanding of nature because only some natural beings are said to have souls (*Ph.* 192b 10-11; cf. 255a 6-7; *DA* 412a 14-15).

[159] Grube (1964, pp. 120-121) notes that this was a common usage of the Greek word '*Ψυχή*' which implied the mortality of the soul and 'even in the fifth century the word 'psyche' was not automatically linked with the conception of immortality'. Cf. Hamlyn's note on 402a 1.

[160] *DA* 412a 13-14; 413a 21 ff.; 416a 19 ff.

[161] Throughout the thesis, I use a 'faculty' to mean a part of the soul (μέρος τῆς ψυχῆς), in virtue of which living beings have a distinct capacity, rather than a power or a capacity (δύναμις), as it is often used to refer to.

However, it is not immediately clear how many different faculties of the soul Aristotle has in mind. He lists different faculties at different times.[162] However, at the beginning of *DA* II. 3, he makes another list of five types of faculties (δυνάμεις) as if his earlier lists were unsatisfactory (414a 30-32) and says that there are no more faculties than those in the new list.[163] This new list includes the nutritive (θρεπτικόν), the appetitive (ὀρεκτικόν), the sensitive (αἰσθητικόν), the locomotive (κινητικὸν κατὰ τόπον), and the rational (διανοητικόν) faculty.

There are at least two reasons that lead us to raise a doubt about the number of faculties listed in *DA* II. 3. Firstly, the uncertainty about the number of faculties results from Aristotle's classification of living beings in that chapter. If the new list in II. 3 were the right one, it would be expected that he will have five different types of living beings in mind since each faculty is that in virtue of which the living being has different capacities. However, this expectation soon confronts a difficulty because the reading of the chapter suggests that Aristotle appears to think of only four types of living being: that is, those that are capable of (i) nutrition (plants), of (ii) nutrition and sensation (stationary animals), of (iii) nutrition, sensation, and locomotion (irrational locomotive animals), and of (iv) nutrition, sensation, locomotion, and thinking (rational locomotive animals).[164] Thus there is no sign of classifying living beings according to the appetitive faculty.

Secondly, in *DA* III. 9-10 Aristotle appears to identify the appetitive faculty with the source of locomotion, i.e. the locomotive faculty. If this is what he really means to say, why did he list the two faculties as two distinct faculties in II. 3? Thus the unclarity on the number of faculties also raises the question whether the locomotive faculty really is a

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[162] *DA* 411a 26 ff.; 413a 23; 413b 12 ; cf. 433b 2-4.
[163] Hamlyn's note on 414a 29.
[164] Read nutrition in this classification as nutrition and reproduction.

separate faculty along with other faculties. The soul in the sense of the efficient cause suggests its role in growth (and decay), sense-perception, and locomotion (415b 22-27). However, if the locomotive faculty is to be identified with the appetitive faculty, there arises a difficulty in explaining the locomotion of animals. For Aristotle ascribes the appetitive faculty to all animals (413b 22-24; 414b 1-2) and, at the same time, he acknowledges that not all animals are capable of locomotion. Thus, if the two faculties are to be identified and if there is no particular locomotive faculty, it is unclear why only some of animals should be capable of locomotion despite the fact that all animals have one and the same faculty, i.e. the appetitive faculty. I do not believe that Aristotle would hold such an inconsistent position. In what follows, I shall thus ask what Aristotle thinks of as the source of locomotion and what he really meant in *DA* III. 9-10.[165] In doing this, I shall argue that Aristotle acknowledges the locomotive faculty as a distinct faculty in virtue of which the animal is capable of locomotion, from which it will follow that he does not identify it with the appetitive faculty and that the number of faculties he had in mind is five.

In Section 1 (*a*), I shall first examine the implication of Aristotle's analogy of geometrical figures with soul-faculties mentioned at *DA* II. 3, 414b 19 ff. Then, in Sec. 1 (*b*), I shall discuss how Aristotle comes up with five faculties. I have said above that there might arise a doubt about the number of faculties since "there is no sign of classifying living beings according to the appetitive faculty". This claim is indeed based on a mistaken assumption that he distinguishes soul-faculties according to the different sorts of living beings. That is, it claims that since the expressions 'animals capable of sense-perception' and 'animals capable of *orexis*' have the same extension, sense-perception and *orexis* must

[165] In the present and the next chapters, I shall thus attempt to clarify what the locomotive faculty is. In doing this, I shall, in the present chapter, focus on the question of what psychological capacities or activities are necessary for the arousal of locomotion, whereas, in the following chapter, I question what kind of role *phantasia* plays in locomotion and whether it is always involved in its arousal.

be the same capacity and the appetitive faculty appears to have no distinct status of its own. Thus, I shall show that Aristotle does not distinguish faculties according to their extensions, but according to the functions or activities of the animal.

Section 2 examines what kinds of animals Aristotle regards as non-locomotive (i.e. as not having the locomotive faculty), by focusing on his discussion of stationary animals in his biological works. In the course of this examination, we shall see that Aristotle is not denying them any and every form of locomotion, but a specific form of locomotion *for the sake of an end*, i.e. the capacity to move in space towards a specific end at a distance. This specific form of locomotion is related to the capacity for recognising objects at a distance. However, Aristotle conceives that some animals have only the contact senses (i.e. touch and taste), whereas others have the distance senses (i.e. sight, smelling, and hearing) as well in virtue of the sensitive faculty. We should thus ask why this is so. In answer to this question, I shall show that Aristotle understands that lower faculties play different teleological roles in the animal in virtue of higher faculties under which they are subsumed. On the basis of these discussions and the examination of the role of *orexis* in locomotion in Sec. 3 (*b*), I shall conclude that Aristotle's treatment of the appetitive faculty in *DA* III. 9-10 is not to identify it with the locomotive faculty, but to emphasise its major role in locomotion.

III. 1 *The Discovery of the Faculties of the Soul*

In the present section, I shall be chiefly concerned with (*a*) the relationships between the five soul-faculties introduced in *DA* II. 3 and (*b*) the criterion by which Aristotle distinguishes those faculties.

(*a*) *The Relationships between the Faculties*

Aristotle in general appears to say that living beings have *one* additional power or capacity in virtue of a higher faculty of the soul. For instance, some beings are capable of sense-perception in virtue of the sensitive faculty, whereas others are capable of locomotion in virtue of the locomotive faculty. However, Aristotle thinks that living beings are capable of two types of activities (i.e. nutrition and reproduction) in virtue of one and the same faculty (i.e. the nutritive faculty), which might well be taken to be categorically different activities. For instance, growth is change in quantity, while reproduction is change in substance. Why does Aristotle relate the two categorically different changes closely to each other? It is because he thinks that the growth of a living being, when complete, leads the living being to 'generate offspring of the same kind' (cf. *GA* 715a 19 ff.; *DA* 415a 23 ff.). He would say that this is a natural development (*GA* 760a 31 ff.). However, for Aristotle nature does nothing in vain, but works for what is good (*DA* 415b 15-16; 434a 30-32). And, since living is better than non-living, ensouled beings tend to maintain their lives (*GA* 731a 28-30). Thus nutrition is for an individual's survival, whereas reproduction is for the survival of its kind.[166]

On the other hand, Aristotle's discussion of the faculties of the soul in *DA* II. 2 raises a doubt whether the list in II. 3 is as exhaustive as the classification of the senses discussed in III. 1. The classification of the senses (i.e. sight, hearing, smell, taste, and touch) is exhaustive because they have distinct or exclusive classes of objects from one another, namely, each 'sense perceives one class of sensible objects' (425a 19-20). And there are no other objects that might escape from being perceived by any of the five senses (cf. 424b 22-23). Aristotle seems to think that his list of the faculties is also exhaustive. He refers to the

[166] King (1996), p. 66.

five types of faculties and says that "there is no soul apart from the forms of soul just enumerated" (414b 22-23). However, there is a question about the status of the faculty of thought and contemplation (τοῦ νοῦ καὶ τῆς θεωρητικῆς). Aristotle at 413b 25-29 states somewhat tentatively that the faculty is separable.[167] Considering that the second half of II. 2 (413b 4 ff.) is devoted to the discussion of a separability of a faculty from other faculties, what he says about the faculty of thought or the rational faculty should also be construed as a discussion of the separability of the faculty from other faculties.[168] However, Aristotle in the subsequent chapter introduces the faculty of calculation and thought (λογισμὸν καί διάνοιαν) as including, i.e. inseparable from, the lower faculties (415a 8-10).[169] Are they two different types of one and the same rational faculty or two different faculties? If they turn out to be different faculties, Aristotle's list of the faculties will not be exhaustive.

(i) *The Comprehensibility of the Faculties*

What draws our special attention is the fact that Aristotle maintains that the higher faculties subsume the lower ones.[170] In the *DA*, he often claims that the lower faculties are separable from the higher ones on the ground that we observe that there is a class of living beings that only have the latter and still exist without the former (cf. 413b 1 ff.; 415a 23 ff.), whereas the higher ones must subsume the lower ones because they cannot have the former without the latter (cf. 416b 17-19). The comprehension of the lower faculties means that

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[167] Cf. *ἔοικε* at 413b 25.

[168] As may well be noted, the separability of a faculty from other faculties concerned here must be distinguished from the separability of the soul from the body discussed in I. 1, 403a 3 ff. Cf. Hicks's note on 414a 25. He reads the statement "τοῦτο μόνον ἐνδεχεται χωρίζεσθαι" (413b 24-25) in relation to 412a 16 (καὶ σῶμα τοιόνδε) and translates it as "it alone is separable 'from the body'". However, the addition of the phrase 'from the body' is not warranted by the discussion of II. 2. Moreover, at 415a 1-12 Aristotle once again confirms that the discussion here is the separability of a faculty *not* from the body, *but* from other faculties of the soul. Hamlyn (note on 413b 16) rightly points out that Aristotle's question here is not whether a faculty 'can have separate existence'. See also, Barnes (1971-1972), p. 34.

[169] See Hicks's note on 413b 25.

[170] However, in our talk of faculties we shall often use them as single ones which do not include the lower ones. Such a use will be clear from the relevant contexts.

animals are capable of nutrition and sense-perception, for instance, not because they have the nutritive faculty and the sensitive faculty which are separated from each other, but because they have the sensitive faculty that subsumes the nutritive faculty. Aristotle explicates the point as follows:

> It is now evident that a single definition can be given of soul only in the same sense as one can be given of figure. ... It is true that a common definition can be given for figure which will fit all figures without expressing the peculiar nature of any figure. So here in the case of soul and its specific forms. Hence it is absurd in this and similar cases to look for a common definition which will not express the peculiar nature of anything that is and will not apply to the appropriate indivisible species, while at the same time omitting to look for an account which will. The cases of figure and soul are exactly parallel; for the particulars subsumed under the common name in both cases—figures and living beings—constitute a series, each successive term of which potentially contains its predecessor, e.g. the square the triangle, the sensory power the self-nutritive. Hence we must ask in the case of each order of living things, What is its soul, i.e. What is the soul of plant, man, beast? (414b 19-33)

The last paragraph explicitly indicates that Aristotle here deals with the question he has raised at *DA* I. 1, 403 5 ff. whether we can give a common definition of the soul. It is to be noted that Aristotle is concerned with a common definition not of a single species of living beings (e.g. the soul of the plant or the soul of the horse or the like), but of the whole genus of living beings. In the above passage, Aristotle makes an analogy with a geometrical figure of the quadrilateral subsuming the triangle. The analogy primarily suggests that when a triangle is subsumed under a quadrilateral, a definition of a quadrilateral will not describe the nature of the triangle. However, Aristotle's statement at 414b 23-25 (see above) suggests two further reasons for rejecting a common definition. Firstly, the definition of a man's soul, for example, might not show all the faculties it subsumes, and, secondly, the definition of a plant's soul might not show the faculties which other higher animals have.[171]

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[171] It is, however, to be noted that Aristotle has already given a sort of common definition of the soul in *DA* II. 1. For a discussion of this matter, see A. C. Lloyd (1962, pp. 73-74)

Aristotle is then saying that since the sensitive faculty, for instance, is defined as the capacity for sense-perception, such a definition will not immediately show the capacity for nutrition that is subsumed under it. He elsewhere says that a single faculty of the soul is that in virtue of which the living being is capable of a single activity (*PA* 645b 5 ff.). We might construe this remark in the same fashion as above; that is, a definition of a single faculty will only include a single capacity of the animal without showing the capacities it has in virtue of the lower faculties it subsumes.[172]

Now we need to ask what it is for a triangle to be subsumed under a quadrilateral. Does Aristotle want to say that we can separate out a triangle as well as a quadrilateral from the quadrilateral? Let us examine the following figures:

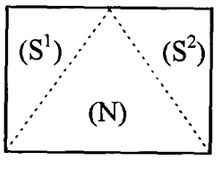

Figure (i)

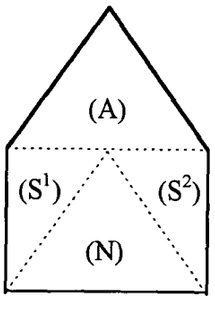

Figure (ii)

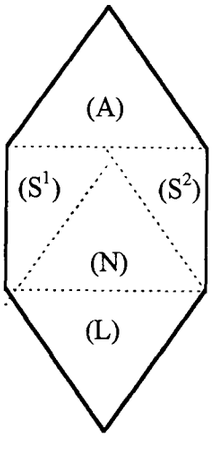

Figure (iii)

Supposing that the lower figures were actually subsumed under the higher ones, it appears that when we remove a triangle from the given quadrilateral, what remains will not be a quadrilateral (see Figure (i)). In effect, it seems that the higher the figures we consider, the

[172] We say here that A is 'a higher faculty than B' or 'A subsumes B', when a living being has additional capacities in virtue of A to those in virtue of B. For instance, the sensitive faculty is higher than the nutritive faculty, because a living being is capable of nutrition as well as sense-perception in virtue of the sensitive faculty, whereas it is capable only of nutrition in virtue of the nutritive faculty. On the other hand, B is lower than A since a living being is capable of an activity in virtue of B without involving A.

less plane we have left for extracting the lower figures subsumed under them. That is, in Figure (i) we do not have enough plane for a quadrilateral after separating out a triangle, i.e. (N), from a quadrilateral, whereas in Figure (ii) we have no plane left for a pentagon itself after separating out a triangle and a quadrilateral. On the other hand, in Figure (iii) we have enough plane for a triangle and a quadrilateral, but not enough for a pentagon and nothing for a hexagon itself. It thus appears that, if the higher figures actually subsumed the lower ones, they would not show all the lower figures that are subsumed under them. In particular, Figure (iii) clearly exemplifies that the examination of the hexagon will not show the pentagon that is subsumed under it. That is, a triangle *and* a quadrilateral *and* a pentagon are not subsumed under the pentagon as such, but they are subsumed potentially.

How does Aristotle apply this thesis to the case of the faculties of the soul? Supposing that (N) is the nutritive faculty, we might have the following formulations:

Figure (i) = the sensitive faculty = $(N) + (S^1) + (S^2)$,

Figure (ii) = the appetitive faculty = $(N) + (S^1) + (S^2) + (A)$, and

Figure (iii) = the locomotive faculty = $(N) + (S^1) + (S^2) + (A) + (L)$.

We have seen that Aristotle undoubtedly thinks that the animal is not capable of nutrition and sense-perception in virtue of the nutritive faculty *and* the sensitive faculty, but in virtue of the sensitive faculty. That is, if both capacities were in virtue of separate faculties, then Aristotle would say that the soul of the animal includes two individual faculties which are mutually exclusive and he would not talk about the higher faculties subsuming the lower ones. That is, for instance, (L) in Figure (iii) alone is not the locomotive faculty, but the hexagon as a whole is the locomotive faculty. At this stage, the geometrical analogy suggests that higher faculties *potentially* subsume lower ones so that the animal is capable

of various functions or activities in virtue of a single faculty of the soul, but not in virtue of its various and separate faculties.

It is not clear to what extent Aristotle believes that the analogy of the geometrical figure can explain the relation of the faculties, although he stresses its significance (414b 28-29). Moreover, the *DA* passage cited above (414b 19-33) does not show that Aristotle has considered that sort of question. However, there is another implication of the analogy that can be inferred from the consideration of the relation between faculties rather than that between geometrical figures. As we shall see in detail in Section 2 below, Aristotle thinks that, for instance, some animals only have the contact senses (touch and taste), whereas others have the distance senses (seeing, smelling, and hearing) in addition in virtue of the sensitive faculty. Then one might question whether, for instance, the nutritive faculty of a plant and the nutritive faculty subsumed in the sensitive faculty of an animal are the same. Do they function in the same way? Or, is the nutritive faculty somehow altered by the fact that it is subsumed under the higher faculties?

Aristotle does not think that since this living being here has life, i.e. the nutritive faculty, it must or can have other faculties. If he did, he would say that a plant can become an animal. Rather, he thinks that being an animal entails being alive.[173] Aristotle says that being an animal is primarily having the capacity for sense-perception (413b 2-3). However, he does not mean that the animal has only that capacity, but also the capacity for nutrition, *orexis*, etc. (413b 22-24; 414b 1-6). Aristotle believes that, as the function of the nutritive faculty in a plant is to keep it alive, the animal utilises all the capacities it has for its survival (*PA* 639b 14 ff.; cf. *DA* 415a 23 ff.). This suggests that, for instance, the nutritive faculty in a locomotive animal functions in relation to other activities, such as sense-perception,

[173] Aristotle ascribes a priority to the triangle, but it is prior logically, but not in time (Hicks's note on 414b 29).

orexis, locomotion, etc. for the sake of its survival. Moreover, considering Aristotle's concern with the hierarchy of soul-faculties (see below), it seems that he also thinks that the lower faculties subsumed under the locomotive faculty will be somehow determined in the way in which the ultimate activity that a locomotive animal is supposed to achieve, i.e. locomotion, is best actualised. For the capacity for locomotion of a locomotive animal is the means by which it maintains its survival.[174] The same inference can be made from the consideration of Aristotle's introduction of three types of *orexis*.[175] It is not the case that all animals equally have the same sort of *orexis*: all animals have *epithumia* which is the lowest form of *orexis*, whereas some of them also have *boulesis* which subsumes the lower types of *orexis*. In particular, Aristotle makes it clear that the rational being's capacity for *boulesis* is in virtue of her rational faculty of the soul (esp. 433a 21-25). This kind of relation between lower and higher faculties will become clearer as we proceed to examine the roles of *orexis* in the present chapter and those of *phantasia* in the next chapter.

(ii) *Some Questions Concerning the Locomotive Faculty*

Let us now briefly consider a question about the place of the locomotive faculty in the hierarchy of soul-faculties. This question arises in relation to the thesis of the higher faculties subsuming the lower ones. According to the thesis, it seems that the rational faculty is higher than, or subsumes, the locomotive faculty because an animal is capable of locomotion without the capacity for reason which it has in virtue of the rational faculty. However, this turns out to be true only with qualification. Aristotle in *DA* III. 10 appears to say that a certain type of animal locomotion must involve the capacity for reasoning. That is to say, there cannot be that type of locomotion without the capacity. If so, the

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[174] Cf. Sec. 2 (*c*) below.
[175] See Sec. 3 (*a*).

locomotive faculty seems higher than the rational faculty in the hierarchy of the faculties. For the rational faculty is involved in bringing about locomotion which is an actualisation of the locomotive faculty. This sort of difficulty with placing the locomotive faculty in the hierarchy might be the reason why Aristotle was elusive about the faculty on several occasions. In effect, in the *DA* he does not mention the locomotive faculty (τὸ κινητικὸν κατὰ τόπον), where it is expected (e.g. 410b 19 ff.; 414a 32 ff.), except for the place in making a list of the faculties of the soul in II. 3 (cf. *Sens.* 436b 20).[176] Moreover, in the *MA* where he is chiefly concerned with locomotion there is no mention of the term 'the locomotive faculty', either. Also, as we shall see below, in a discussion of animal locomotion in *DA* III. 9-10 Aristotle entirely dispenses with the term and, even, appears to identify it with the appetitive faculty. It seems that, at the beginning when he was not seriously concerned with the capacity for thinking and its relation to locomotion, he might have thought that the locomotive faculty was nicely placed in the hierarchy. However, once he thought over the role of thinking in the arousal of locomotion, he might have realised that there would arise a problem with the location of the faculty in the hierarchy.

There is also a question about the status of the locomotive faculty. As mentioned earlier, in *DA* III. 9-10 Aristotle appears to regard the appetitive faculty as a source of motion, i.e. the locomotive faculty, despite the fact that he has introduced them as separate faculties in II. 3. There is, however, a difficulty in identifying them with each other since it is not the case that all the animals that have the capacity for *orexis* are capable of locomotion (415a 6-7; 415b 22). Since Aristotle maintains that all animals that have the capacity for sense-perception also have the capacity for *orexis*, it is clear that the two

[176] Aristotle at 433b 2-4 makes another list of the faculties of the soul claimed by his predecessors. Here among θρεπτικόν, ὀρεκτικόν, αἰσθητικόν, κινητικὸν κατὰ τόπον, and διανοητικόν, κινητικὸν κατὰ τόπον is later replaced with βουλευτικόν. Hicks (note on 433b 3) seems to say that this is a modified list accepted by Aristotle.

capacities are not sufficient conditions for locomotion. If so, the appetitive faculty is not simply to be identified with the locomotive faculty. I shall return to discuss both questions arising in relation to the locomotive faculty in Section 3 (*b*). For the moment, we need to try to determine by what criterion Aristotle distinguishes soul-faculties.

(*b*) *The Criterion for Distinguishing the Faculties*

Apart from some doubts and peculiarities with reference to soul-faculties discussed above, we also need to attend to a couple of points that arise with regard to the classification of animals. We saw above that the classification does not tell us all the faculties Aristotle mentions in II. 3 for it omits the appetitive faculty. What causes this omission? With reference to that question, let us now turn to examine how we know that living beings have the faculties and what criterion Aristotle has in mind in distinguishing them.[177]

In a discussion of the role of *phantasia*, D. Frede[178] presents two criteria for distinguishing faculties, i.e. having a separate capacity (hereafter, the 'capacity criterion') and having a separate object (hereafter, the 'object criterion'). She argues that *phantasia* is

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[177] Note that, although I shall not discuss it in detail, there is a problem about the status of *phantasia*, i.e. whether it is to be regarded as a distinct faculty of the soul (see e.g. Wedin, 1988, p. 39 ff.). Aristotle does not list it as a faculty at 414a 30-32 nor at 433b 2-4. Although it once appears as a faculty, when he introduces a different list at 432a 28 ff. as the one suggested by his predecessors, he is very sceptical about accepting it as valid (see 434b 1-2). The answer to the question whether *phantasia* is a distinct faculty seems to rely on the criterion or criteria of distinguishing faculties. Indeed, the treatment of *phantasia* as a separate faculty has been criticised by a number of commentators for different reasons. For example, D. Frede (1992, p. 281) claims *phantasia* does not have a faculty of its own because it has 'no separate capacity in the soul' and 'no separate objects for it'. Cf. Turnbull (1994), p. 322 ff. On the other hand, Wedin (1984, xi and Chapter 2) argues that it is not a faculty "but rather subserves the operation of full-fledged faculties ..." Thus their contention is that if *phantasia* does not satisfy both the conditions, i.e. having its own objects and having its own capacity, it cannot be a separate faculty. We shall establish below that the most plausible criterion is the capacity criterion; i.e. a faculty is different from another if a living being has a certain capacity in virtue of the former, but not in virtue of the latter. For more detailed examination of the involvement of *phantasia* in locomotion, see Ch. IV.

[178] D. Frede (1992), p. 281, followed by Turnbull (1994, p. 322 ff.).

not a distinct faculty on both counts.[179] I do not here intend to discuss her thesis in detail, but I do want to point out that her 'object criterion' cannot be a general criterion of distinguishing all the faculties Aristotle lists in *DA* II. 3. Frede is primarily concerned with cognitive faculties, e.g. sense-perception, *phantasia*, and thought, and so with their cognitive objects. One of the criteria on which she bases her rejection of *phantasia* as a distinct faculty is that it does not have its own objects, but is 'parasitic' on sense-perception.[180] What about *orexis*? Does it have its own objects apart from those perceived through the senses? Since the objects of *orexis* (*epithumia*) are what is pleasant (414b 6; see below), it might be suggested that *orexis* has fewer objects than those of the senses if animals sometimes perceive objects without regard to whether they are pleasant or unpleasant. In any case, one thing is clear: that all these objects are recognised through the senses, as in the case of *phantasia* (see Chapter IV). If so, Frede's argument might seem to lead us to the rejection not only of *phantasia*, but also of the appetitive faculty as a separate faculty. For what the animal desires is presented through the senses in the first instance. In other words, the animal does not perceive objects in virtue of the appetitive faculty, but in virtue of the sensitive faculty. Similarly, granting that the locomotive faculty is a separate faculty, as Aristotle appears to think in *DA* II. 3, it hardly seems reasonable to talk about the objects of locomotion itself. One might argue that since animals move in place to pursue what is pleasant and to avoid what is painful or unpleasant, they certainly have some objects in relation to locomotion. However, the objects are objects of *orexis* that are perceived through the senses; they are not the objects of locomotion itself. In other words, locomotion seems to have some objects not in virtue of itself, but in virtue of involving

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[179] D. Frede (1992, p. 281) attends to a passage where Aristotle stresses the dependence of *phantasia* on the activity of sense-perception (428b 11-15; 429a 1; *Insomn.* 459a 17 f.). The relevant passage reads that '*Phantasia* is a motion that does not happen without sense-perception but comes to be as the result of the activity of sense-perception and is *like* the perception' (cited from Frede).

[180] D. Frede, (1992), p. 281.

other capacities, e.g. sense-perception, *orexis*, etc. Thus it hardly seems appropriate to talk about the objects of locomotion without taking other capacities into consideration. Thus the object criterion fails to be a standard criterion of distinguishing all the faculties Aristotle has in mind.

On the other hand, one might also argue that having a different extension of animals (hereafter, let us call it the 'extension criterion') serves as a criterion of distinguishing faculties since belonging to a different class of animals means having a different faculty. However, this criterion fails to be the overall criterion of distinguishing faculties. For, as we saw, Aristotle maintains that animals that are capable of sense-perception are also capable of *orexis* (*DA* 413b 22-24; 414b 1-6). Thus the sensitive faculty and the appetitive faculty are applied to the same extension of animals, namely, to all animals. Thus the examination of different extensions of animals does not show all the soul-faculties Aristotle lists in *DA* II. 3. For this reason, extension appears defective as the overall criterion of distinguishing faculties.

In effect, its failure as a criterion is an expected result. For, despite the fact that the extension criterion is largely dependent on what kinds of capacities living beings have or what kinds they display, it fails to ask what differentiates extensions or classes of animals. This is indeed a question about the capacity criterion suggested by Frede (see above). The capacity criterion indicates that if the animal has a distinct capacity in virtue of a certain faculty (which it will not have in virtue of another), then the two faculties are distinct from each other. Thus what is important in determining Frede's enquiry about the status of *phantasia* as a distinct faculty seems to rely on the answer to the question whether the animal has a new or additional capacity in virtue of *phantasia*, but not in virtue of other faculties. Thus, although, at first glance, the extension of different classes of animals seems

to be a criterion for distinguishing faculties, it is not the extension itself, but the capacity, that classifies different animals.

In the establishment of having a different capacity as a distinguishing criterion, we need to ask why Aristotle thinks that there are neither more nor less than the five faculties. In answering the question, we need to note that Aristotle's discovery of the faculties is dependent on how animals appear to exist and to act. Plants are said to be alive since they appear to absorb water and nutrition, decay, and grow, whereas animals seem to have more than these capacities and so are capable of more activities. And we observe that among animals some move around and others do not. Are all the faculties Aristotle has in mind manifested as observable activities? Before answering this question, we need to attend to Aristotle's consistent criticism in the *DA* of his predecessors who had claimed the corporeality of the soul (e.g. 404b 30 ff.). His criticism initially suggests that he acknowledges that the faculties are not immediately observable to our senses. Also, at an earlier stage he denied the separate existence of the soul from the body and its activity and passivity without involving the body (see 403a 3 ff.). Moreover, his characterisation of the soul in *DA* II. 1 as 'the form of a natural body having life potentially within it' (412a 20-21) also suggests that we will be able to gather information about the soul through the observation of the living body in which it is actualised. In effect, Aristotle often states that his discovery of the different faculties relies on the observation of animal activities (e.g. 411b 19; 413a 11 ff.).

Let us now return to our earlier question whether Aristotle's list of the faculties derives directly from the observation of the different activities that living beings display. Aristotle says that the capacity for nutrition is the primary characteristic of living beings (413a 21 ff.), whereas the capacity for sense-perception is what distinguishes animals from plants (413b 1

ff.). However, do we observe the process of nutrition itself? The *displayed* activities of living beings in virtue of the nutritive faculty are their growth or their reproduction, rather than their nutrition or digestion. We see that this plant is now taller than yesterday, whereas we do not directly see its inner physiological processes of the digestion of food. The link between growth and nutrition is thus based on reflective thoughts rather than direct sensory observations. What about perceiving? Do we observe the perceiving of animals? Aristotle seems to think that we do. However, as in the case of nutrition, he would not say that he sees that this dog is perceiving a hot object through its sense of touch right now etc. He rather seems to say reasonably that he sees the dog's reaction to a certain object.[181] For instance, by observing a dog moving away when it touches fire, we might infer that it must have the sense of touch. Although the two life capacities, nutrition and sense-perception, are not directly observable to us, they manifest some phenomena which we can relate to them on a simple reflection.

Nor does the animal's activity in virtue of the appetitive faculty seem directly observable to us. In effect, the case of *orexis* seems even more difficult. What are the related phenomena or activities which we can relate to the operation of *orexis*? What about thinking? Does it have any direct observable manifestation? It seems that Aristotle's introduction to them, in particular, in *DA* III. 10 with regard to the source of locomotion is not irrelevant to the questions raised here. Although locomotion is not the only empirical datum which suggests the power of thinking in rational beings, his treatment of the relation between *orexis* and thought in the chapter seems to indicate that animal locomotion displays the actualisation of them. In other words, their activities are displayed through locomotion. If this is right, we can also find a reason for Aristotle's consistent claim that locomotion is

[181] Cf. the example of an insect cut into two, both parts of which have sense-perception and locomotion (413b 20-21).

the only motion that the soul originates in animals,[182] although he clearly acknowledges that the soul is also the cause of other motions as well (*DA* 415b 22-27). Among the three types of motion that, Aristotle thinks, the soul gives rise to in the living body (cf. 406a 12-13), locomotion is the motion that most directly manifests the role of its relevant faculty, i.e. the locomotive faculty,[183] whereas *orexis* and thought are unrecognisable without reflecting on their roles with reference to locomotion. Locomotion does not at once manifest their activities in it. But the observation of the activity and the reflection on the question of what other capacities are involved in the arousal of it lead us to understand the necessary faculties and the activities of the soul.[184] What is to be noted at this stage is that Aristotle's reflection is centred on the directedness of locomotion to the external object, which we shall see in more detail in a discussion of the locomotive faculty in *DA* III. 9-10.

III. 2 *Animal Locomotion*

Aristotle says in *Ph.* VII. 2 that all forms of locomotion are reducible to pulling, pushing, carrying, and twirling (243a 15 ff.), which are again reducible to pulling and pushing (243b 17-244a 3). Since he maintains that there are no more than four types of change, change in respect of quantity, of quality, of place, and of substance (200b 33 ff.), he tries to explain every change in terms of one of them. In doing this, Aristotle makes an interesting remark,

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[182] *DA* 410b 20-21; *Ph.* 259b 6-7; 261a 23-24.

[183] Cf. Ch. 1. Sec. 2 (*c*) on the priority of locomotion.

[184] Compare my argument so far with pseudo-Aristotle's remarks at *Spirit* 482b 17-21; "Of these, the motion of the pulse is perceptible by the senses wherever we touch the body. That of the respiration is perceptible up to a certain point, but is recognized in the majority of parts by a reasoning process. That of nutrition is in practically all parts determinable by reasoning, but by sense in so far as it can be observed from its results." I have presented three types of recognition of the faculties through the activities of living beings: (1) immediate recognition, i.e. locomotion, (2) recognition by relevant phenomena and reasoning, e.g. nutrition, and (3) recognition by reasoning for the most part, e.g. *orexis*.

Again, inhaling is a form of pulling, exhaling a form of pushing; and the same is true of spitting and of all other motions that proceed through the body, whether excretive or assimilative, the assimilative being forms of pulling; the excretive of pushing off (243b 12-15).

Thus if any living beings inhale or exhale or get nutriment through contact the environment or produce excrements or the like, they are somehow capable of locomotion. According to this account, we have an intuitively unwelcome consequence that not only animals but also plants might be locomotive because all of them have the nutritive faculty of the soul and are capable of nutrition. However, as far as the examples in the passage are concerned, Aristotle primarily focuses on the activities of animals rather than those of plants. Moreover, he would explain the nutrition of plants in terms of increase and decrease, i.e. of motion in quantity, rather than in terms of locomotion.

For Aristotle κίνησις κατὰ τόπον, i.e. locomotion, designates motion in three dimensions rather than in two dimensions, i.e. in a space rather than on a surface (cf. *Ph.* 209a 5-6). Thus in ascribing locomotion to animals, he seems to have roughly three types of motion in mind, i.e. flying, swimming, and walking (*MA* 698a 5-7; *GA* 715a 26-27). At first glance, the *Ph.* passage cited above does not seem consistent with the *DA* passages where Aristotle tells us that even some animals do not have the locomotive faculty and so they are incapable of moving in space (e.g. 415a 6-7; b 23). For the passage seems to suggest that even so-called non-locomotive animals (τὰ ακίνητα) are capable of some primitive forms of internal locomotion, such as respiration, nutrition, excretion, etc. If so, it appears that Aristotle's conception of locomotion is widely used than we would normally think.

Aristotle does not offer a separate analysis of the activities of the sensitive soul in non-locomotive animals other than a general account of the sense of touch, in particular, in *DA*

II. 11 and in III. 1. He does offer a brief account of stationary animals (τὰ μόνιμα) in the *HA* I.1, but we initially have to determine whether we are to identify them with non-locomotive animals (animals that do not have the locomotive faculty) introduced in the *DA*.[185] For, in the *HA*, Aristotle appears to say that such animals as the snail, the oyster, etc., which he introduces as examples of stationary animals, are still capable of motion in space (see 487b 6-17). If the animals dealt with in the *HA* are the examples of non-locomotive animals discussed in the *DA*, the distinction between those that have the locomotive faculty and those that do not hardly seems to depend on whether they are capable of locomotion as such.

What about the directedness of locomotion or, in other words, the point that locomotion occurs for the sake of an end? Is it possible that Aristotle regards stationary animals as lacking the locomotive faculty in the sense that they are unable to exercise locomotion for the sake of an end? I believe that this is what he meant. In what follows, I shall thus show in more detail that Aristotle allows stationary animals not only the capacity for internal locomotion of their bodies such as the contraction and expansion of the lungs, but also the capacity for spatial locomotion in a qualified sense. However, I shall argue, when he denies the locomotive faculty to some animals, he is denying them the capacity for locomotion that is directed to a specific end.

(a) An Account of Non-Locomotive Animals in the DA

As mentioned, Aristotle thinks that the primary activity of soul is 'self-nutrition and growth and decay'.[186] Thus since plants are capable of nutrition and undergo decay and growth, they are also ensouled (i.e. living) beings. The nutritive soul is that in virtue of

[185] *DA* 414b 15-16; 415b 22-23; cf. 413b 1-3; 415a 6-7; 432b 19-21.
[186] *DA* 412a 14; 413a 21 ff.; 416b 17-19.

which beings are alive, and so it is in a sense the primary soul (*DA* 415a 23-26). Animals also possess the nutritive faculty and so are alive in so far as they are constantly nourished. However, animals are different from plants because they have some additional capacity other than the capacity for nutrition. This is the capacity for sense-perception that 'leads us for the first time to speak of living things as animals' (413b 2-3; cf. *Juv.* 467b 18 ff.). However, being an animal does not mean having all the senses. We saw that Aristotle makes it clear that the classification of different beings according to their capacities is primarily based on an empirical observation of their activities (*DA* 413a 26; cf. b 17-20). As he derives the separability of the nutritive faculty from other faculties from the fact that plants that only have this faculty are alive (cf. 413b 4-9; 414a 2-3), he also derives the separability of the sense of touch from the other senses from observation of the animals that have only the sense of touch.[187] For Aristotle, the sense of touch is thus the primary sense which belongs to all *animals* and without which "it is impossible for the animal to have any other sense" (435a 13-14). He even claims that the loss of this sense 'brings about the death of an animal' (435b 4-5).[188]

Aristotle relates the sense of touch to obtaining nutriment. That is, the sense of touch is primarily the sense for such qualities as dry, moist, hot, and cold. What can be perceived through touch has those qualities and it is with the organ of touch that animals perceive such qualities (423b 27-31). And the sense of touch is the sense for food that consists of what is hot, dry, etc.

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[187] *DA* 413b 4-6; see also, 414a 2-4; 3, 415a 4-6; *Somn.* 455a 26-27.

[188] Considering the case of animals in a vegetative state, this might be taken as an exaggeration. Aristotle, perhaps, means to emphasise that since the sense is the criterion of the distinction between an animal and a plant, for an animal to be as such it must have the sense. See Hicks's note on the relevant paragraph.

... all animals have the sense for food (for touch is the sense for food; the food of all living things consists of what is dry, moist, hot, cold, and these are the qualities apprehended by touch) all other sensible qualities are apprehended by touch only indirectly (414b 6-9).

For Aristotle the sense of taste is also a kind of touch (421 a 19-20). And the two senses are closely related to nutrition (cf. *Sens.* 436b 13-17). The sense of touch discriminates between, for example, what is hot and what is cold, whereas the sense of taste discriminates between what is sweet and what is bitter (*DA* 426a 27-b 16). However, "we do not," says Aristotle, "perceive what is equally hot and cold or hard and soft, but only excesses, the sense itself being a sort of mean between the opposites that characterize the objects of perception" (424a 3-4). Thus we can only perceive with the sense of touch either what is hotter or what is colder, or what is harder or what is softer, but not the medium state.

Aristotle thus claims that the sensitive faculty is a power to make distinctions.[189] Those that have the sense of touch are capable of making a distinction between tangible qualities. However, having the sense means more than that; that is, it also means having the capacity for the feeling of pleasure and pain. In answer to the question on what occasions animals feel either pleasure or pain, Aristotle seems to be saying that it is that which is 'brought into the proper ratio' (426b 4-7) that makes them feel pleasant when 'the sense and the ratio are identical' (b 8), whereas when something is out of the ratio they feel pain.

... now all animals have one sense at least, viz. touch, and whatever has a sense has the capacity for pleasure and pain and therefore has pleasant and painful objects present to it, and wherever these are present, there is *epithumia*, for *epithumia* is *orexis* of what is pleasant. (414b 3-6; 413b 22-24)

In this way, since stationary animals possess the sense of touch and the capacity for *orexis*, they pursue what is presented to them as pleasant and avoid what is not. Since Aristotle is

[189] *DA* 427a 18 ff.; 432a 15 ff.; *MA* 700b 19-22.

concerned with stationary animals, for the present we do not need to assume that such a capacity for pursuit and avoidance (διωκτὸν καὶ φευκτόν) is at once related to the arousal of locomotion. This capacity for pursuing or avoiding in animals is of course in virtue of the appetitive faculty of the soul within them. As mentioned earlier, according to Aristotle, having the capacity for sense-perception entails the capacity for feeling pleasure and pain, and the capacity for this feeling entails the capacity for *orexis*. Thus these capacities are shared by all animals and so they are not the primary conditions for distinguishing locomotive animals from non-locomotive animals. In other words, although non-locomotive animals have the capacity for making a distinction between sensible qualities, the capacity for discerning what is pleasant from what is not, and the capacity for *orexis*, Aristotle maintains that these capacities are not sufficient for the arousal of locomotion and so they remain non-locomotive.

This discussion raises a question of what other capacities are necessary for locomotion. If non-locomotive animals have all the capacities necessary for locomotion, but are incapable of such a motion, Aristotle's thesis will hardly look cogent. As we shall see at a later stage, he ascribes the distance senses to all locomotive animals and the capacity for thinking to some of them. Since the distance senses are common to all locomotive animals, we have to find out how or in what way the capacity for discerning sensibles *at a distance* is related to the arousal of locomotion. If, as we saw, the role of the senses is mainly for discerning sensible qualities, it is difficult to see how such a capacity should be what makes some animals locomotive. This is not to deny that there must be some close relation of an animal's starting to walk to *seeing* an object at a distance, for instance. However, although Aristotle would say that the capacity for seeing in virtue of the sensitive faculty necessitates an appropriate bodily organ, i.e. an eye, he would not acknowledge that that capacity

necessitates the bodily parts for locomotion (cf. 434a 32 ff.). The necessitation of such parts is ascribed to the locomotive faculty.[190] Thus, at first sight, it is difficult to see how the distance senses are related to locomotion.

However, considering the question why animals move from here to there, we might see a relation between them. That is, they move for the sake of something which is at a distance. Thus the distinction of sensible qualities made by the distance senses seems to be closely linked with the directedness of locomotion. Such a link suggests that those animals that have the capacity for locomotion for an end must have the distance senses as well. This is, I further argue below, the ground for Aristotle's claim that although non-locomotive animals have the sense of touch, the capacity for *orexis*, and the capacity for certain types of locomotion, they are said to be non-locomotive since they do not move for an object at a distance. If so, we might well conclude that, when Aristotle discusses the animal's locomotion in virtue of the locomotive faculty in the *DA*, he has in mind the particular type of locomotion which is related to the directedness. Let us turn to see whether this conclusion can be reached.

(*b*) *Stationary Animals*

Aristotle's treatment of animals that do not have the locomotive faculty in the *DA* is obscure on its own. He does not offer here any specific examples of those that are non-locomotive or that do not have the locomotive faculty. However, elsewhere in the biological works,[191] Aristotle introduces what he calls τὰ μόνιμα which he seems to identify with non-locomotive animals. He there appears to think that they have the sense of touch and so the sensitive faculty, but not the locomotive faculty. And yet he seems to

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[190] Cf. Furley (1996), pp. 59-77.
[191] Esp. *HA* I. 1 and *GA* I. 1. See below.

think that they are not entirely deprived of locomotion. That is, he ascribes to them the capacity not only for some types of internal spatial motion, but also for motion from place to place in a qualified sense.

In the *GA*, Aristotle explicitly offers some specific examples of non-locomotive animals for the first time and gives a brief account of their characteristics.

> ... all those creatures which do not move, as the testacea and animals that live by clinging to something else, inasmuch as their nature resembles that of plants, have no sex any more than plants have, but as applied to them the word is only used in virtue of a similarity and analogy. (715b 17-20)

In the *HA* I. 1, Aristotle claims that stationary beings are found only in water, but not on land (487b 6-7). However, he later on admits that such animals can be found on land as well, e.g. snails (527b 34 ff.). Perhaps, he meant to say that those land animals also get their food in the water and cannot live away from water (487a 24-26). At any rate, it appears reasonable to think that the animals mentioned in the above passage also include some land-animals that are non-locomotive. However, since he has given more detailed information about the testacea than any other animals, we shall focus on his treatment of them.

Testaceans are defined by Aristotle as those "that have their hard substance outside and their flesh-like substance within, and their hard substance can be shattered but not crushed; and to this genus belong the snail and the oyster" (*HA* 523b 9-11).[192] And they live by being attached to the external object, as plants are rooted to the ground. Thus τὰ μόνιμα which is in general translated as stationary animals primarily means animals that live by clinging or attaching to the external object.[193] However, he elsewhere says that not all

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[192] See Peck (1965, notes on 487a 26 and 490b 11) observes that whether to translate ὄστρεον as the oyster or the shellfish depends on the context in which it is used.

[193] By 'stationary,' I shall hereafter mean 'clinging to something else'.

testaceans are deprived of locomotion; some of them are capable of locomotion (528a 30 ff.). Aristotle distinguishes three types of stationary animals that are found in water: (i) those that 'live in close adhesion to an external object, as is the case with several kinds of shellfish' (487b 6-10), (ii) those that 'adhere at one time to an object and detach themselves from it at other times, as is the case with a species of the so-called sea-anemone'[194] (487b 12-14; 531a 32 ff.), and (iii) those that 'are unattached but motionless (τὰ ακίνητα), as is the case with oysters and the so-called holothuria' (487b 14-15).

At first glance, it seems that only type (i) animals are stationary as well as non-locomotive. However, Aristotle says at a later stage that this is not true. In *HA*, V. 15, he says that even among the shellfish some 'shift about from place to place' (see 547b 33-548a 7; *PA* 681b 32-682a 2). Moreover, although he seems to say above that all type (ii) animals are detachable from the ground, he later distinguishes two sub-species one of which is detachable and the other of which is not (*HA* 548a 24-27). Thus he says more or less the same thing about (i) and (ii). In particular, (iii) clearly shows that being non-locomotive does not necessarily mean being stationary. It then seems that not all stationary animals are fixed to external objects nor are they all non-locomotive.

What is clear from the discussion so far is that it is wrong to think that all the stationary animals are incapable of locomotion in external space. What then is the difference between locomotive animals and non-locomotive animals that Aristotle tries to distinguish in the *DA* by means of the possession of the locomotive faculty? In order to answer this question, we need to focus on the difference in their capacities. Aristotle believes that all testaceans have the senses of touch and taste, but not the distance senses (i.e. sight, smell, and hearing),[195] though some of them may have 'the least developed sense of smell' (*HA* 531a 23-25). Thus

[194] *PA* 681a 37-681b 1 denies that the sea-anemone is a testacea.
[195] *HA* 535a 6 ff.; 487b 10-12; esp. 531b 1-3.

there is no doubt that they have the sensitive faculty of the soul. On the other hand, although such animals that have the capacity for limited sense-perception, feeling pleasure, and *orexis* do not have the locomotive faculty, it does not mean that they are wholly incapable of locomotion; they remain capable of some sort of locomotion. In other words, some animals appear to be capable of locomotion without the locomotive faculty. If this is the case, it appears that the locomotive faculty is not absolutely necessary for the animal to be capable of locomotion. However, before taking any conclusive position, we must ask whether Aristotle has some specific type of locomotion in mind, when he denies the capacity for locomotion to some animals that do not have the locomotive faculty.

In *DA* III. 11, Aristotle says that the main concern in the chapter is to discuss whether those animals that have only the sense of touch have the capacity for *phantasia* (433b 31-434a 1). As he does on several occasions, he again claims that since they have the primary sense, they must also have the feelings of pleasure and pain and, also, *orexis*.

> It is evident that they feel pleasure and pain: and, if they have these, then of necessity they must also feel *epithumia*. But how can they have *phantasia*? Shall we say that, as their movements are vague and indeterminate, so, though they have these faculties, they have them in a vague and indeterminate form? (434a 2-5. trans. Hicks)[196]

What is to be noted here is that Aristotle seems to suggest that the possession of the capacity for *phantasia* in the animal cannot be directly inferred from its capacity for feeling pleasure or pain and for *orexis*. That is, although he has no doubt that those animals that have the sense of touch have such capacities, he appears hesitant to admit that the capacity for *phantasia* thereby follows. Aristotle rather seems to suggest that we should infer the presence of *phantasia* in stationary animals from the observation of their motion. Thus, in

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[196] Italics are my replacements, respectively, of 'desire' and 'imagination' in Hicks's translation.

answer to the question "φαντασία δὲ πῶς ἂν ενείη;" he answers that "ἢ ὥσπερ καὶ κινεῖται ἀορίστως, καὶ ταῦτ' ἔνεστι μέν, ἀορίστως δ' ἔνεστιν".

However, what does Aristotle mean by an indeterminate motion (ἀόριστος κίνησις)? There are two sources that we can use to get some information about it. We first need to note Aristotle's characterisation of stationary animals in the chapter itself. He calls them τὰ ἀτελῆ (*DA* 433b 31). It is generally translated imperfect animals, but the literal meaning of the term suggests that he regards them as animals without a purpose or an end. As noted, Aristotle is chiefly concerned with locomotion in *DA* III. 9-11. Thus it might be understood that he regards stationary animals as those that move about without any determinate or particular end. Furthermore, the word ἀόριστος might well be taken to deliver the same implication (434a 4-5). Balme observes Aristotle's use of the word in relation to proximate matter and says that "It does not mean uncertain quality of action, nor an inscrutable intractability as some have suggested, but simply that the matter has not yet been formally determined into a precise state."[197] When Balme's account is applied to locomotion, the ἀόριστος motion of stationary animals means locomotion without a determined purpose rather than an indeterminate sort of motion. As mentioned, some stationary animals, e.g. sea-anemones, are able to attach themselves to and detach themselves from the external object (e.g. *HA* 487b 12-14) and they move from place to place to some extent. Thus, Aristotle seems to say not that they do not move at all, but that they do not move for some purpose, e.g. to catch something to eat. An account of the hydra given in a modern biological text will clarify this point.

[197] Balme (1987), p. 283.

While remaining fixed by its foot, Hydra is capable of bending movements. It can also, on occasion, move from place to place. This it does mainly by "looping" like a caterpillar, the animal bending over till the tentacles touch the "ground," when the foot is released and moved forwards.[198]

The hydra is an example of a stationary animal in the sense that it lives by being attached to an external object, though it is not an example given by Aristotle himself. It moves to a certain extent, as is the case of the sea-anemone. The hydra does not seem to move for the sake of an end, but it simply moves when its tentacles touch the ground. In general, according to Aristotle, such an animal takes in its 'nourishment from below, just as do plants with their roots' (*PA* 683b 20-21). And its locomotion is not for a specific end at a distance, although it might happen to catch some prey while it is detached, i.e. it may happen to bump into the prey.

Our discussion of stationary animals so far shows that, although they do not have the locomotive faculty, they are still capable of some sort of locomotion. However, we have to make it clear that not all animals are capable of the same type of locomotion. Having the primary conditions for locomotion (i.e. the sense of touch, the capacity for feeling pleasure or pain, and the capacity for *orexis*), all animals appear to be capable of the primitive forms of bodily locomotion, such as nutrition, respiration, contraction, expansion, etc., namely, the forms of internal locomotion which they perform without changing their places. On the other hand, although stationary animals are said to be non-locomotive, they appear to be capable of detaching and attaching themselves which might well be taken by Aristotle to be a form of locomotion in a proper sense, i.e. spatial motion.

However, their locomotion is without a specific end since they are not equipped with appropriate sense organs, e.g. eyes, that are necessary for them to recognise things at a

[198] Palmer (1959), p. 237.

distance as their end. Strictly speaking, in Aristotle's terms it is in virtue of the lack of the appropriate faculty rather than the organs that they are not capable of locomotion for the sake of an end. Should they have, for instance, the locomotive faculty, they would have the appropriate sense organs that are necessary for the animal to move towards an end at a distance. This line of argument indeed upholds our claim made earlier that the lower faculties are somehow teleologically determined by being subsumed by the higher faculties. If the sensitive faculty were not subsumed under the locomotive faculty, then the animal would have only the sense of touch in virtue of it. The animals that have the sensitive faculty subsumed under a higher faculty have more senses than those that have the sensitive faculty which is not subsumed under any other faculty.

(*c*) *The Distance Senses and the Teleology of Locomotion*

Let us now turn to examine more closely what kinds of psychological or living capacities are necessary for animals to be able to move towards a specific end. Aristotle at times implies that the sense of touch is not directly related to the capacity for locomotion (*DA* 414b 16-17; 415a 4-8), although it is indispensable for animals since it is what makes them different from plants and since it is closely related to their obtaining food. More explicitly, at *Sens.* 436b 18-19, he says that those animals which are capable of locomotion have other senses, i.e. smelling, hearing, and seeing, in addition to the sense of touch. The sense of touch is for the being of the animal rather than for its well-being (cf. *DA* 434b 23-27; 435b 20 ff.). By being, Aristotle, of course, means the maintenance of nutrition and so of life. The sense of touch is thus a prerequisite for their living. What about the distance senses? Aristotle maintains that they contribute not only to the preservation of the animal, but also to its well-being or higher perfection.

The senses which operate through external media, viz. *smelling, hearing, seeing*, are found in all animals which possess the faculty of locomotion. To all that possess them they are a means of preservation in order that, guided by antecedent perception, they may both pursue their food, and shun things that are bad or destructive. But in animals which have also intelligence they serve for the attainment of a higher perfection. (*Sens.* 436b 18-437a 2)

A characteristic difference between the sense of touch (including taste) and other senses is that when we touch objects, we perceive them by immediate contact, whereas with the latter senses, such as sight, hearing, and smell, we perceive through media such as air and water (*DA* 424b 24 ff.; 423b 1 ff.). Thus these latter senses are distance senses.

But there remains this difference between what can be touched and what can be seen or can sound; in the latter two cases we perceive because the medium produces a certain effect upon us, whereas in the perception of objects of touch we are affected not *by* but *along with* the medium; it is as if a man were struck through his shield, where the shock is not first given to the shield and passed on to the man, but the concussion of both is simultaneous. (423b 12-16)

If animals have only the sense of touch, they are not able to perceive objects at a distance. And should animals not be able to perceive the objects at a distance they would not need to move in place in order to reach those objects. For, even if they are able to move in space, their locomotion will not be directed to an object at a distance that looks or smells pleasant. In other words, their locomotion without perceiving an object in advance would be for an indeterminate end. Aristotle thinks that stationary animals are unable to approach or avoid specific objects at a distance because they lack the appropriate sense organs for perceiving them (see below). Thus if they confront something to eat while wandering about without any specific aim, it would be a chance event. In contrast, the animal which possesses the sense of sight, for example, is capable of perceiving objects at a distance. Let us take an example of a hungry eagle whose eyes are so developed as to see rabbits running in the field

from a great distance while flying. Were it not able to see them, it would not have any specific aim to pursue, although it has the *orexis* to alleviate its hunger. On the other hand, even if it gets pleasure from perceiving them as such, it would not move towards them if it had no *orexis* for them. Thus the eagle requires both the distance senses and *orexis* for its locomotion. Moreover, it would not be able to pursue the rabbits unless it had the appropriate bodily organs for locomotion. The proper combination of the senses and *orexis* calls for all the necessary organs when catching a rabbit.[199]

At this stage, we need to turn to examine Aristotle's account of teleology in relation to locomotion. In the *MA*, he says,

> ... all animals both impart movement and are moved for the sake of something, so that this is the limit to all their movement: the thing for-the-sake-of-which. Now we see that the movers of the animal are reasoning and *phantasia* and choice and wish and appetite. And all of these can be reduced to thought and desire. ..... For insofar as something else is done for the sake of this, and insofar as it is an end of things that are for the sake of something else, thus far it imparts movement. And we must suppose that the apparent good ranks as a good, and so does the pleasant (since it is an apparent good). (700b 15-29; cf. *DA* 433b 13-21)

According to this passage, for animals to be capable of locomotion they must have objects presented to them as ends, the capacity for discerning whether they are pleasant or not, and the capacity to pursue what is pleasant and avoid what is painful. Aristotle in the passage appears to say that the external object is a direct object of *orexis*. There is no doubt that *orexis* is *orexis* for an object; that it requires an object. However, as seen in the case of the eagle, for its locomotion objects must be presented to it through the distance senses in the first instance. Thus the object of *orexis* is the object presented through the senses. However, it is important to note that the object of *orexis* is not the object presented through the senses as such, but the object presented as a pleasant or unpleasant (or painful) thing.

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[199] See Section 3 (*a*).

Thus, as far as locomotion is concerned, the phrase 'for the sake of something' is more specifically 'for the sake of what is pleasant or what is good'.

However, although the object of *orexis* is what is pleasant and so the animal with *orexis* pursues it, it is not the ultimate end of being an animal. As we saw earlier, being an *ensouled* creature designates being a *living* creature. That is, living is the essence of the ensouled being. Thus Aristotle calls the soul the formal cause (*DA* 415b 12-14). And also, being an *ensouled* creature designates the perseverance of life which is what living beings are for. This is the role of the soul as the final cause (415b 15-22). Furthermore, being an *ensouled* creature designates the capacity for performing certain living activities. The role of the soul as the efficient cause, however, differs in different beings (415b 22-27). For instance, plants are capable only of growth and decay,[200] whereas animals are capable of more various activities.

At this stage, we need to attend to some passages in the *PA* where Aristotle emphasises the primacy of the final cause among the causes in zoological or biological explanation. As all the parts of the animal are necessary for the sake of life (*PA* 692b 20-693a 22),[201] all their functions are also for the sake of it (639b 14 ff.). However, it does not appear that all the functions of the bodily parts are directly related to the ultimate end, i.e. the maintenance of life, but that they are initially for the sake of the sub-ends which are again for the sake of the higher ends and the like, which are eventually for the sake of the ultimate end (cf. *PA* IV, 10). In making this point, Aristotle seems to have in mind what he calls 'hypothetical necessity'.

> There are then two causes, namely, necessity and the final end. ... There is, however, the third mode, in such things at any rate as are generated. For instance, we say that food is necessary in neither of the two

[200] For a discussion of decay in the structure of teleology, see King (1996), pp. 21-24.
[201] Cf. Nussbaum (1978), pp. 76-80.

modes, but because an animal cannot possibly do without it. This third mode is what may be called hypothetical necessity. For if a piece of wood is to be split with an axe, the axe must of necessity be hard; and, if hard, must of necessity be made of bronze or iron. Now exactly in the same way the body, since it is an instrument—for both the body as a whole and its several parts individually are for the sake of something—if it is to do its work, must of necessity be of such and such a character, and made of such and such materials. (*PA* 642a 1-13)

Aristotle's examples in the passage are mainly examples of matter such as wood, bronze, etc. Thus it might be thought that the hypothetical necessity is related only to matter or the body. However, this seems misleading. We have to note that in that passage Aristotle also takes an example of food which is necessary for the animal. To say that the animal necessitates food implies that the animal must have not only the capacity to digest the food, but also appropriate organs for the digestion. In so far as the animal has the capacity and the organs both of which are necessary for the digestion of food, the food can be said to be necessary for the animal.

In effect, all living beings require nutriment or food for their survival. However, they require different means to obtain it. For instance, the locomotive animal requires certain organs for its motion in place. However, Aristotle maintains that the animal has the capacity for locomotion *not* because it has the relevant organs, *but* that it has the organs because it has the capacity (432b 24-25; *PA* 687a 3 ff.).[202] However, as we saw in Section 1 (*a*), he appears to maintain that position not only for bodily organs, but also for soul-faculties. We saw that Aristotle's analogy of the geometrical figure suggests that the triangle subsumed under a quadrilateral exists only potentially in the definition of the

[202] Aristotle criticises Anaxagoras who maintains the opposite view that animals are superior because they possess hands. His criticism here seems consistent with the homonymy principle we discussed earlier. With the principle, Aristotle tells us that a dead body is not a body at all, although it, presumably, has all the bodily parts and structures as the living body does. He does not conceive that a dead body will be alive at some time. Thus he does not think that since animals have appropriate bodily organs, they will be able to obtain necessary capacities. Cf. Furley (1996), pp. 59-77; Charles (1984), p. 86.

quadrilateral. Likewise, the nutritive faculty exists potentially, for instance, in the sensitive faculty and will be actualised not on its own, but with reference to the sensitive faculty. All animals possess the sense of touch and so the capacity for *orexis*, but only some are able to move in space for the sake of an end (*DA* 433b 27-28). That is, although all animals have the appetitive faculty which subsumes the lower faculties, the appetitive faculty appears to contribute differently to different classes of animals and, eventually, different classes of animals produce different activities. However, this is not because one and the same faculty on its own is actualised in different ways in different animals, but because it has an interaction with some other capacities of which some animals are capable in virtue of their higher faculties.[203]

Being a living being as such is different from being an animal as such. That is, for something to be a living being it only needs to have the capacity for nutrition, whereas for something to be an animal it must have, at least, the sense of touch and appropriate sense organs in addition to the capacity for nutrition. Since animals are distinguished from plants by the possession of the capacity for sense-perception (i.e. the sense of touch), the capacity for nutrition and reproduction in the case of animals is taken for granted. On the other hand, being a locomotive animal requires more capacities than simply being an animal. That is, locomotive animals are distinguished from non-locomotive animals by the capacity for locomotion. However, this does not mean that locomotive animals only have that capacity. They must undoubtedly have the capacities for being animals. In other words, being a locomotive animal designates having an additional capacity on the hypothesis that it has other necessary capacities. The capacity for nutrition is a sufficient condition for a being to be alive. However, for a being to maintain its life as an animal it also needs to utilise its

[203] Cf. Section 3 (*a*) below.

capacity for sense-perception. In other words, its capacities need to be geared together for it to maintain its life as an animal. However, those capacities are not directly relevant to its being called a locomotive animal, although it cannot be locomotive without them. Thus a locomotive animal must have hypothetically necessary capacities in order to exercise its capacity for locomotion, which is eventually related to the maintenance of the animal's life.

III. 3 *The Locomotive Faculty*

Although Aristotle says that stationary animals also have the capacity for feeling pleasure and pain and for *orexis*, this need not puzzle us since it is clear that the operation of such feelings and *orexis* with reference only to the sense of touch would be different from that with reference to the distance senses. Thus he seems to have in mind two types of operation based on the feeling of pleasure and the arousal of *orexis* one of which leads to locomotion towards an end and the other of which does not. Thus for Aristotle it seems that the locomotion of stationary animals from place to place is not self-motion in a strict sense. For, although they are capable of internal locomotion which Aristotle would accept as a form of self-motion, they are not capable of locomotion for the sake of an end since they lack the distance senses which present the end for them to pursue or not. That is, the end entails a direction which is provided by the distance senses, although it is not just by the senses but together with *orexis* that the animal moves in a certain direction. In what follows, we shall make a fresh start and turn to examine the source of locomotion Aristotle has in mind in *DA* III. 10-11.

(*a*) *The Role of Orexis in Locomotion*

In the *DA*, Aristotle first introduces *orexis* as a faculty of the soul at 413b 22 and then puts it in the list of faculties at 414a 30-32. *Orexis* (ὄρεξις) is the genus that has *epithumia* (ἐπιθυμία), *thumos* (θυμὸς), and *boulesis* (βούλησις) as its species (*DA* 414b2-3; cf. *MA* 700b 17-22).[204] He ascribes the first two to irrational beings, i.e. to stationary animals and irrational locomotive animals, and the last to rational beings (432b 5-6). Aristotle appears to imply that this division is meant to be an alternative to Plato's tripartite division of the soul which was guilty of a 'failure to recognize that the faculty of desire is a single main faculty'.[205] He argues that "if the soul is tripartite *orexis* will be found in all three parts" (432b 6-7). Perhaps, Aristotle has an eye on *Republic* IV where Plato is concerned with the division of the soul. In particular, at 440d ff. Plato separates the rational faculty from the appetitive faculty and regards it as excluding the characteristics that belong to the appetitive faculty. However, Aristotle thinks that this cannot be true (cf. *DA* 432b 3-4). And he goes on to exemplify the case of animal locomotion (cf. 432b 7-9) which shows that *orexis* is involved even in the action of rational beings. That is, if one has *boulesis*, one also has *epithumia* and *thumos*, and, if one has *thumos*, one also has *epithumia*, whereas, if one has *epithumia*, one does not necessarily also have the others. Aristotle thus tries to resolve the problem of how the same sort of capacity can be exhibited in different faculties by showing that the higher faculties subsume the lower ones. In this way, he maintains that the living being has at least one common capacity, no matter what kind of faculty it has (415a 1-12).

Nussbaum offers a brief historical survey of the word *orexis* used by Aristotle and his predecessors and points out two major characteristics of it: (1) "it strongly implies

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[204] Translators differ in translating *ὄρεξις* and *ἐπιθυμία*. For example, Hamlyn (1993) translates them as, respectively, desire and wanting, Hicks (1907) as appetency and concupiscence, Nussbaum (1978) as desire and *orexis*, etc. I leave them untranslated.

[205] Ross (1961), note on 432b 4-7.

directedness towards an object" and (2) it "is active more than passive".[206] In effect, these characterisations are apparent in Aristotle's usage of the word. As Nussbaum claims, Aristotle does maintain that *orexis* is for something. That is, for him animals move for the sake of some end (e.g. *MA* 700b 26-28; *DA* 432b 15 ff.). Moreover, the 'end' is not any end picked up at random, but what is pleasant (*DA* 414b 6) or what is good (415b 20-21; *MA* 700b 26-29), and, also, it is something 'that can be brought into being by action' (*DA* 433a 29-31; cf. *MA* 700b 25). In relation to locomotion, Aristotle, in general, uses the generic term *orexis*.[207] But he also uses such terms as *epithumia*[208] and *boulesis*[209] as its species. It appears reasonable to think that *boulesis* belongs to rational locomotive animals, whereas *epithumia* belongs to irrational locomotive animals. However, the reading of *DA* II. 3, 414b 1-6, for instance, suggests that Aristotle ascribes *epithumia* to non-locomotive animals as well. On the other hand, at *MA* 701a 37 he introduces *thumos* as that which leads to locomotion or action.[210] It thus seems undeniable that Aristotle firmly believes that there is a close link between *orexis* and locomotion.

What kind of relation, then, do the species of *orexis* have between them? A question raised at this stage is whether Aristotle thinks that what has the higher forms of *orexis* subsumes the lower forms or that different animals have different forms of *orexis*. We saw Aristotle's claim that the higher faculties of the soul cannot be separated from the lower ones, whereas the lower ones are separable from the higher ones.[211] Thus the higher

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[206] Nussbaum (1983b), p. 132.
[207] *MA* 701a 4; a 35; 702a 8; 703a 5; *DA* 432b 17; 433a 10 etc.
[208] *MA* 700b 18; 701a 32; *DA* 433a 26; b 7 etc.
[209] *MA* 700b 18; 701b 1; *DA* 433a 23-25.
[210] I shall largely ignore the role of *thumos* in locomotion for which Aristotle does not provide any detailed information in the action contexts such as the *DA* and the *MA*. But, see e.g. *EN* 1149a 25-31. Cooper (1996) investigates its role in relation to moral values (esp. p. 97) and relates it closely to reason (p. 90; p. 93). This is a matter of further discussion which I shall not pursue in this thesis.
[211] E.g. *DA* 413a 32-34; 415a 1-4; 434a 23 ff. For the separability of the sensitive faculty, see 413a 32-33; b 4-5; 415a 1-3 etc. And for reflective thought, see 413b 25-27; cf. 415a 12.

faculties subsume the lower ones and involve attribution of additional capabilities to the living being. Does Aristotle also apply this idea to the species of *orexis*? The first indication of a positive answer follows from his remark that *orexis* is common to the faculties that belong to animals (cf. *DA* 432b 5-8). If there is something common in different faculties, then it is undeniable that the higher faculties include the capacities that are produced in virtue of the lower ones. Then, *boulesis* is not a completely new form of *orexis*, but a capacity that embraces the lower forms of it. Another indication might be suggested by a passage in the *EN* where Aristotle says that irrational elements in the soul are shared in the exercise of a rational principle.

For we praise the reason of the continent man and of the incontinent, and the part of their soul that has reason, since it urges them aright and towards the best objects; but there is found in them also another natural element beside reason, which fights against and resists it. For exactly as paralysed limbs when we choose to move them to the right turn on the contrary to the left, so is it with the soul; the impulses of incontinent people move in contrary directions. ... No doubt, however, we must none the less suppose that in the soul too there is something beside reason, resisting and opposing it (1102b 13 ff.)

The 'something' that resists and opposes reason turns out in the *DA* to be *epithumia*.

Further, even when thought does command and bids us pursue or avoid something, sometimes no movement is produced; we act in accordance with *ἐπιθυμίαν*, as in the case of moral weakness. (433a 1-4; cf. 434a 12-16)

Aristotle here seems to contrast thought with *epithumia*. However, with reference to locomotion the contrast must be between reasoned *orexis* and non-reasoned *orexis* since no thought without involving *orexis* can bring about locomotion. According to *DA* III. 11, 433a 23-26, when thought is said to produce motion it does so in a form of *orexis*, i.e. *boulesis*. The passages cited above then suggest that a rational being's action is achieved

through a conflict between *epithumia* and *boulesis*.[212] Irrational locomotive animals that are not capable of thought will start their motion according to their *epithumia* without any conflict. On the other hand, rational beings are capable of producing two types of action, one according to *epithumia* and the other according to *boulesis*. However, even in rational beings when their *epithumia* is too great, they will pursue what is perceived as pleasant without employing thought and thus without *boulesis*. It is thus clear that for Aristotle *epithumia* belongs not only to irrational beings, but also to rational ones, whereas *boulesis* belongs to rational beings only.

Nussbaum claims that *boulesis* is not *orexis* 'plus reasoning about how to achieve the object,' but *orexis* 'for a privileged object, which must be presented by reason'.[213] She refers to Aristotle's claim at *Met.* 1072a 27 that "the *first* object of βούλησις is the real καλόν" as a supporting passage. However, a caution is necessary in understanding the talk of objects of different species of *orexis*. For it would be strange if two animals, for instance, were fighting against each other for two different victims. They can just go for different ones. Similarly, all Aristotle wants to emphasise in the *Metaphysics* passage is that the object chosen by employing reason is better than others, not that *boulesis* and *epithumia* have different objects. The difference rather seems to lie in the fact that *epithumia* is concerned with the pleasant and the painful,[214] whereas *boulesis* is concerned with the good and the bad (cf. 1112a 1 ff.). In other words, the two species of *orexis* concern different

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[212] Aristotle envisages three modes of locomotion that rational beings produce (*DA* 434a 12-16); (*a*) *epithumia* overpowers *boulesis* and sets it in movement, (*b*) *boulesis* acts upon *epithumia*, and (*c*) *epithumia* overcomes *epithumia*. For example, (*c*) when a man is hungry as well as thirsty, he chooses a drink rather than food. This can be a typical example of action deriving from *orexis* which does not involve calculation. However, (*b*) even if he sees something edible, he might think that the food is not good for health and decide not to eat it. On the other hand, (*a*) when his starvation is too great, and so even if he knows that it is not good for health, he might just decide to eat it.

[213] Nussbaum (1978), pp. 335-336.

[214] *DA* 413b 23-24; 414b 4-5; 431b 8; *EN* 1111a 31-33; b 17-18.

values or aspects of one and the same thing.[215] However, what will be pursued by animals that only have *epithumia* as pleasant might be pursued by human beings as good when it is reflected on by reason. In this way, Aristotle makes it clear that *orexis* as a whole concerns the pursuit of what is pleasant (or good) or the avoidance of what is painful (or bad).

Returning to our earlier question whether the higher species of *orexis* subsume the lower ones, the answer seems positive. As mentioned, all the species of *orexis* seem to have in common the tendency to pursue or avoid something. However, as Nussbaum claims, *boulesis* is not *epithumia* plus reason, but the result of the interaction between *orexis* and reason. In other words, we might say that *boulesis* is a refined form of *orexis*. As noted, the object of *epithumia* and *boulesis* must be one and the same thing, but *epithumia* and *boulesis* value it differently. That is, one and the same thing might appear to have different values such as pleasant or good. But what is pleasant is not always what is really good; what appears pleasant to *epithumia* might appear to be bad on the reflection of reason. Thus *orexis* itself hardly seems to have any relation to the real worth (or the genuine good) of its object. Indeed, seeing an object as pleasant or unpleasant has a lot to do with the role of *phantasia*, which we shall discuss in the subsequent chapter. *Orexis* pursues or avoids what appears pleasant or unpleasant. And the capacity for *orexis* thus involves the capacity for pursuit or avoidance.

In general, *orexis* comes first in the order of the capacities involved in the arousal of locomotion. For instance, an eagle feels hungry and looks for prey, although there is, of course, a case when it sees a rabbit and, all of a sudden, feels hungry. We might have the following two processes that lead to locomotion:

(i) *Orexis* - sense-perception (the distance senses) - *orexis* - locomotion

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[215] Charles (1984), pp. 87-88.

(ii) Sense-perception (the distance senses) - *orexis* - locomotion

In (i), an eagle is hungry, which makes it feel pain. There occurs an *orexis* to avoid the feeling and starts to look for something to eat. The eagle sees a rabbit at a distance and the end which was vague at the beginning of looking for prey becomes specific, i.e. catching that very rabbit to satisfy its appetite. Between the stage of seeing a rabbit and moving towards it, there must be one more operation of *orexis*. That is, if the eagle sees a flower, it would not move towards it. But since the prey is a rabbit which gives it pleasure, the eagle pursues it. However, at the beginning of the operation of *orexis* the eagle does not have any concrete aim. On the other hand, in the case of (ii) the object of *orexis* is concrete from the beginning, e.g. the rabbit over there, not just something to eat. In a 'drink example' at *MA* 701a 31 ff., Aristotle seems to have process (i) in mind. However, although he acknowledges that *orexis* is the proximate reason for locomotion, he does not seem to notice *orexis* which comes just before the arousal of locomotion, i.e. the second *orexis* in (i). When Aristotle says that *orexis* is for the sake of what is pleasant, he would mean a specific end. If not, his claim that locomotive animals must have the distance senses will be vacuous. A vague *orexis* for an object at a distance is made concrete by the operation of the distance senses and, eventually, leads the animal to move towards it. Thus it might be said that *orexis* is incorporated in the perception, e.g. seeing a rabbit as pleasant to eat (cf. Chapter IV). Since we have so far seen the role of *orexis* in locomotion, we shall now turn to examine Aristotle's introduction of the appetitive faculty as the source of locomotion *DA* III. 9-10.

(*b*) *The Search for the Locomotive Faculty in DA III. 9-10*

Aristotle in *DA* III. 9 raises a question concerning "the soul which originates movement" (432a 19; b 13-14). At the outset, he proposes three possible alternatives; (*a*) it is one of the faculties so far mentioned, or (*b*) it is a single faculty which has not been mentioned, or (*c*) it is all the faculties as a whole (432a 19-22; cf. *PA* 645b 5 ff.). It appears indubitable that Aristotle presents (*a*) as an answer to the question since he claims that "That which moves therefore is a single faculty and the faculty of *orexis*" (*DA* 433a 22). However, this statement needs further clarification.

Considering Aristotle's proposal, it might be expected that the overall trend of the chapter in question will be focused on denying that each of the faculties alone is sufficient to bring about locomotion. He does appear to embark at *DA* 432b 15-433a 8 on examining each of the faculties separately and questions whether each of them alone is sufficient for arousing locomotion. However, as we shall see presently, this impression is misleading. Aristotle does not treat them as individual faculties, but as the faculties that subsume the lower ones. He first claims that the nutritive faculty must not be the source of locomotion for the reasons (1) that 'the motion is always for an end' and (2) that 'it is accompanied by *orexis* or by *phantasia*'. However, these are indeed poor reasons to support his claim. For in *DA* II. 3 he has said that the souls in all living beings are for the sake of some end (415b 15-22). Thus for Aristotle even the souls of plants are also the final causes. Moreover, *orexis* and *phantasia* are not only in locomotive animals, but also in stationary animals (434a 3-5). It is not clear whether Aristotle realises that such reasons are thus insufficient. But he soon turns to appeal to our sense-experience and says that "if it were the nutritive faculty, even plants would have been capable of originating such movement and would have possessed the organs necessary to carry it out" (432b 18-19). Again on the basis of an

empirical observation, he also denies the sensitive faculty as the source of locomotion for the reason that, although all animals have the faculty, some are incapable of locomotion (432b 19-21).

We saw earlier that the difference of the sensitive faculty is the primary reason for distinguishing locomotive animals from non-locomotive animals. It then seems that the distance senses are the criterion for the distinction. For all animals have the contact senses, the capacity for feeling pleasure or pain, and the capacity for *orexis*. However, Aristotle argues that the distance senses are not sufficient for locomotion, but that there must be some other capacity in virtue of which the animal moves for an end. And he relates this capacity for the pursuit of an end to the capacity to provide appropriate bodily parts necessary for locomotion (*MA* 702a 17-19). That is, although the sensitive faculty provides the distance senses necessary for locomotion, those that do not have appropriate organs are not capable of locomotion and so there must be some other faculty that necessitates the organs.

In rejecting the theoretical rational faculty as the source of locomotion (*DA* 432b 26-31), Aristotle focuses on the fact that locomotion necessitates the capacity for 'avoiding or pursuing an object'. He says that (i) the calculative or speculative reason (θεωρητικὸς νοεῖ) does 'nothing' practical to bring about locomotion, such as saying something about an object to be avoided or pursued (432b 26-29; cf. 433a 1-2). However, he, on the other hand, seems to think that the 'nothing (οὐδὲ)' is too extreme. Thus he promptly acknowledges that (ii) the calculative reason sometimes leads to locomotion and goes on to say that not all speculations arouse locomotion, i.e. "the mind often thinks of something terrifying or pleasant without enjoining the emotion of fear" (432b 29-31).

The difficulty with these remarks is that Aristotle here is not consistently concerned with separate or individual faculties of the soul as excluding other faculties. Individual faculties are supposed to mean that the higher ones do not include the lower ones. When he denies thought to be the source of locomotion, he sometimes seems to think that the rational faculty does not include the lower faculties. For instance, in the case of (i) where Aristotle says that no locomotion would follow from the capacity of reason, he must regard it as a capacity that does not involve any form of *orexis*. For since he maintains that every animal locomotion involves *orexis* (433a 22-23), reason must bring about some locomotion if it were to include some *orexis*. On the other hand, in (ii) he seems to include a form of *orexis* since he is concerned with the case in which a man is *sometimes* led to locomotion by calculative reason.

On other occasions, Aristotle also implicitly takes some basic living capacities for granted, i.e. as hypothetically necessary conditions. For instance, when he considers the question whether *orexis* on its own without involving other capacities is sufficient for locomotion (433a 7-8), he must presuppose that the possessor of *orexis* also has the sensitive faculty since there cannot be the appetitive faculty without it.[216] In the same way, when he talks of the calculative reason above, he at times regards it as including and, at times, as excluding *orexis*. However, Aristotle's denial of the appetitive faculty as a sufficient condition for explaining animal locomotion in the following passage does not seem to concern the inclusion of the lower faculties.

> Lastly, *orexis* too is incompetent to account fully for movement; for those who successfully resist temptation have *orexis* and *epithumia* and yet follow thought and refuse to enact that for which they have *orexis*. (433a 7-9)

[216] However, only when he considers knowledge, does he treat it as separate from other faculties (see 433a 5-7).

Here it is clear that Aristotle is concerned with the motion of rational beings. He uses the generic form *orexis* in the passage, but, as Hicks suggests,[217] it should be read as denoting the lower species of it. As noted, rational beings have the capacity for thinking as well as the capacity for *orexis*. Aristotle thinks that they originate their motion not only from *orexis* (*epithumia*), but also from thought, though not without *orexis* (*boulesis*). The claim made there is that *epithumia* cannot explain every type of locomotion because there is another form of *orexis* (*boulesis*) that pursues an object presented by thought.

Aristotle's position may appear confusing because his contrast is not between *epithumia* and *boulesis*, but between *epithumia* and thought. However, a short statement from *DA* III. 10 illustrates that *epithumia* in irrational locomotive animals requires a relationship with something, as rational locomotive animals have a certain relationship between *boulesis* and thought in their locomotion. What is this something that has a relationship with *epithumia*? Aristotle uses a conditional phrase 'if we consider *phantasia* as a kind of thinking',[218] and says that *orexis* (*boulesis*) and thought are sources of movement under that condition (433a 9-12). Thus, he is saying that, as rational animals cannot bring about locomotion without the relationship of *boulesis* with thought, irrational animals also need *phantasia* with which *epithumia* has a certain relationship. Thus *phantasia* and thought hold the same place (*MA* 700b 19-22).[219] However, if we are to accept the relations between *epithumia* and *phantasia* and between *boulesis* and thought, we also have to accept that sense-perception is *always* accompanied by *phantasia*. For, among the locomotive animals, those that do not

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[217] Hicks's note on 433a 6.

[218] εἴ τις τὴν φαντασίαν τιθείη ὡς νόησίν τινα (433a 10).

[219] However, giving an account of the status of *phantasia* in this way raises a problem because Aristotle maintains that (sensitive) *phantasia* is common to all animals (*DA* 434a 6; 433b 29-30). As noted, this statement needs a careful consideration in relation to 428a 9-11 where Aristotle appears to contradict himself by saying that it is not found in all animals. See Ch. IV. esp. Sec. 2 (*a*).

have the capacity for thought have, at least, the capacity for sense-perception. If sense-perception is not always accompanied by *phantasia*, then we have to assume that there might be another relation between *epithumia* and sense-perception, which does not involve *phantasia*.[220]

For the present purpose, it is crucial to note that Aristotle finds the appetitive faculty, whether it is *epithumia* or *boulesis*, as a common faculty in every type of locomotion.

> That which moves therefore is a single faculty and the faculty of *orexis*; for if there had been two sources of movement—thought and *orexis*—they would have produced movement in virtue of some common character. As it is, thought is never found producing movement without *orexis* (for *boulesis* is a form of *orexis*; and when movement is produced according to calculation it is also according to *boulesis*), but *orexis* can originate movement contrary to calculation, for *epithumia* is a form of *orexis*. (*DA* 433a 22-26; cf. *MA* 701a 31-b 1)[221]

In *DA* III. 10, Aristotle wants to show the capacities necessary for animal locomotion. It seems that his emphasis on the involvement of *orexis* leads him so far as to give the impression that the appetitive faculty is a single faculty that must be identified with the originating source. However, it cannot be *the sole source* of locomotion because, as Aristotle himself admits here, it cannot explain every type of motion on its own without taking also into account either sense-perception, *phantasia*, or thought.

In brief, *epithumia* is a crude form of the appetitive faculty which belongs to rational beings as well as to irrational beings. However, not all the locomotion of locomotive animals is due to *epithumia*. But, since human beings are capable of calculation in virtue of the rational faculty, their actions might be due to their *boulesis* which produces them according to calculation. Actions that are derived from *orexis* without calculation are much

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[220] Cf. The four types of the locomotive faculty I discuss in subsequent chapter (Ch. IV. esp. Sec. 2 (*b*) and (*c*)).
[221] Cf. Charles (1984), p. 89.

quicker since there need not be the conflict between *orexis* and thought (*MA* 701a 28-30). As we have so far seen, there are two types of locomotion (or action) to which human beings give rise according to their *epithumia* or *boulesis*. In consequence, there cannot be any motion in the absence of *orexis*. And neither sense-perception nor *phantasia* nor thought can be the source of motion independently of *orexis*. When Aristotle uses the generic term *orexis* and speaks as if it were the locomotive faculty, he is merely saying that it is found necessary for every locomotion.[222]

At this stage, however, we need to ask why he singles out this particular faculty any more than e.g. the sensitive faculty as most responsible for locomotion. At first glance, this question appears difficult to answer since there is no doubt that Aristotle maintains that all animals must have the sensitive faculty and the appetitive faculty. However, the answer to that question is unexpectedly simple. It is to be noted that, as seen earlier, although Aristotle maintains that the sensitive faculty is common to all animals, he, in effect, ascribes different senses to different animals. That is, he ascribes the contact senses, such as the senses of touch and contact, to all animals, and all the five senses, including the distance senses, to locomotive animals. Thus the fact that the animal has the sensitive faculty does not guarantee that it is capable of locomotion *towards an end* without including the distance senses which present objects at a distance. Thus there remains the appetitive faculty as the most common and responsible faculty of locomotion.

In consequence, Aristotle's treatment of the appetitive faculty in *DA* III. 9-10 as the sole source of locomotion should not be taken literally. The faculty as an individual faculty which excludes the lower faculties (cf. 433a 22 ff.) can be best regarded as a common

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[222] However, this does not, of course, mean that for Aristotle all sorts of motions by animals involve *orexis*. This account should be restricted to voluntary motions (ἑκουσίους κινήσεις). Aristotle envisages that nonvoluntary (οὐχ ἑκουσίους) motions, such as sleep, waking, etc. are not under the control of *phantasia* and *orexis* (*MA* 703b 8-11). Nonetheless, he seems to allow in the *DA* and in the *MA* that all sorts of locomotion are voluntary motions, though not the reverse.

faculty in every locomotion. And this faculty cannot be identified with the locomotive faculty because there are some animals that have the appetitive faculty, but that are not capable of locomotion for the sake of an end. That is, if the appetitive faculty were the locomotive faculty, then those that have it would be capable of the kind of locomotion Aristotle has in mind, i.e. locomotion for the sake of something. For Aristotle maintains that what has a certain capacity will be able to actualise it at some time. In other words, to say that something is never capable of actualising a certain capacity implies that it does not have the capacity in question, because to say that "this is capable of being but will not be" is not sound (see *Met.* 1047b 3 ff.). Thus Aristotle's restriction of the locomotive faculty to some animals, but not to all animals, suggests that it must be different from the appetitive faculty. Finally, we need to note that the locomotive faculty cannot be treated as lower than the rational faculty at those times when the latter is a necessary condition for locomotion. On the other hand, the rational faculty appears higher than the locomotive faculty insofar as reason is only sometimes instrumentalised in relation to locomotion, whilst the rational life can also be seen as the end of a human being's locomotive efforts.

Summary

Our examination of the account of stationary animals in Aristotle's biological works has shown that he does not deny them all forms of locomotion, but ascribes to them some forms of internal bodily locomotion. Moreover, he also admits that they are capable of locomotion in space, i.e. moving from place to place, in a qualified sense. Thus stationary animals, introduced in the *DA* as those that do not have the locomotive faculty, are non-locomotive not in the sense that they are entirely deprived of each and every form of locomotion, but in the sense that they are incapable of the sort of locomotion that is

directed towards a specific end. Their locomotion is indeterminate and without an end because they do not have appropriate sense organs that allow them to represent an end at a distance. That is, their motion in space cannot be determinate without recognising an end at a distance. Aristotle also maintains that the reason for their lack of appropriate organs is that they do not have the faculty of the soul that will utilise such organs. However, such a faculty is not the sensitive faculty in virtue of which some animals have the contact senses and others have the distance senses in addition. But the sensitive faculty plays different roles in different classes of animals not in virtue of the faculty as such, but in virtue of the influence of the higher faculty that subsumes it.

In concluding again that the locomotive faculty is not to be identified with the appetitive faculty, but must be different from it, we first have to note that any species of *orexis* alone cannot be the source of motion without involving such capacities as sense-perception, *phantasia*, or thought and, also, presupposing hypothetically necessary conditions such as nutrition and the contact senses. And, secondly, even if the appetitive faculty subsumes the lower faculties, it cannot explain why the locomotion of non-locomotive animals is without an end. If it were to be identified with the locomotive faculty, non-locomotive animals would be able to move from place to place for the sake of an end since Aristotle undoubtedly maintains that they also have the appetitive faculty, but are still incapable of such locomotion. Thus it appears that the locomotive faculty of the soul listed in *DA* II. 3 is not an illusory or misplaced concept, but a concept to which Aristotle wants to ascribe a special kind of sense of its own, as he does to other faculties.

We have so far seen what locomotion is and what factors are involved in its arousal. However, it is not sufficient on its own without a further discussion of the involvement of *phantasia* since, as we shall presently see, Aristotle has no doubt that *phantasia* plays an

important role in the arousal of locomotion. It is now time for us to turn to enquire into its role and its significance in the account of locomotion.

CHAPTER IV

THE PSYCHOLOGICAL PICTURE (2): THE ROLE OF *PHANTASIA* IN LOCOMOTION

Aristotle at times appears (i) to emphasise a close relationship of *phantasia* with the arousal of *orexis* and to claim that the picture of animal locomotion cannot be completed without considering its involvement in it (*DA* 433b 28-30; *MA* 702a 17-19). It is, however, a matter of discussion whether we have to take his claim to mean (ii) that *phantasia* is a necessary condition for each and every animal locomotion without exception or (iii) that it plays a significant role in some types of locomotion, though is not indispensable for others. The present chapter examines which of these alternatives is implied in claim (i).

There are two major difficulties in accepting (ii) as the right interpretation of (i). Firstly, Aristotle sometimes appears to acknowledge that there are some animals that do not have the capacity for *phantasia* and, secondly, he also appears to say on several occasions in *MA* chs. 6-7 that sense-perception and thought can individually arouse *orexis* without involving *phantasia*. If either of these appearances proves true, then what Aristotle really meant by (i) is (iii), whereas if both prove false, then it is (ii). Nussbaum, in her commentary on Aristotle's *MA*, discusses in detail the necessity of *phantasia* in animal locomotion and notes an intimate relation of sense-perception and thought to *phantasia*, which excludes the possibility that such cognitive capacities can arouse *orexis* without involving *phantasia*.[223] Thus, she takes the right reading of (i) to be (ii).

In the present chapter, I shall be concerned with two main questions: firstly, what is the role of *phantasia* in animal locomotion? and, secondly, is it always involved in the arousal

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[223] Nussbaum (1978), esp. pp. 232-269.

of locomotion? As for the first, Nussbaum claims that the role of Aristotle's *phantasia* is to present an object as 'an object of a certain sort', e.g. 'an object of five foot', 'an object that is red', or the like.[224] However, for Aristotle, animal *orexis* is aroused, not because the animal sees an object at a distance, but because it sees it as something that is pleasant or painful. That is, once the animal perceives an object as pleasant, there arises *orexis* in the animal, which is followed by its immediate action. In Section 1, I shall thus argue that Nussbaum's characterisation of *phantasia* as 'an object of a certain sort' is not essentially wrong, but it needs a further specification as 'an object of pleasure or pain'.

I shall, in Section 2, turn to argue that the reading of (i) must be (iii) rather than (ii); that is, Aristotle does not think of *phantasia* as an absolutely necessary condition for locomotion, as opposed to Nussbaum's claim. I shall first examine Aristotle's occasional remarks that appear to deny *phantasia* to some animals such as the grub. This question is related once again to the role of *phantasia* in animal locomotion, i.e. presenting an object as pleasant or painful. If the grub has a capacity that plays this role, then it would be able to move although it does not have *phantasia*. Indeed, Aristotle at times appears to think that the animal can perceive things as pleasant or painful without involving *phantasia* particularly in the case of smelling. Although this is, if right, a sufficient ground to reject Nussbaum's claim, I shall further argue that he seems to apply the same idea to the case of thinking, i.e. human beings might think of an object as pleasant or painful or, rather, as good or bad, without involving *phantasia*.

[224] For references, see IV, 1 (*c*) below.

IV. 1 *The Place of Phantasia in Locomotion*

As we saw earlier, in *DA* II. 3, Aristotle is concerned with making a list of the faculties and, also, with their relation to one another, i.e. the higher faculties subsuming the lower faculties. However, he is hesitant about including *phantasia* in the scheme and makes a promise to deal with it elsewhere (414b 14-15). The promise is kept in III. 3, where he treats it in comparison with other cognitive capacities. At the outset, he opens the chapter by speaking as if he were going to discuss both "distinctive peculiarities by reference to which we characterize the soul—(1) local movement and (2) thinking, understanding, and perceiving" (427a 18-20). However, the chapter is silent about (1), but focuses on (2) in relation to *phantasia*. As Wedin points out, in the chapter in question Aristotle "is not even talking about *objects of* the imagination but only about its occurrence *relative to* objects of perception".[225] In the chapter, Aristotle seems to be interested in the common characteristics of *phantasia* in animal activities rather than its specific roles in each activity. Although in *DA* III. 10-11 and *MA* 6-8 he often emphasises the significance of its role in locomotion, it is not immediately clear what kind of role he ascribes to it. Thus the present section chiefly concerns the role of *phantasia* in locomotion. On the other hand, whether *phantasia* must be always involved in animal locomotion is not immediately clear. For Aristotle, on the one hand, says that there cannot be any locomotion without *phantasia* and he, on the other hand, also appears to say that it is not absolutely necessary. Thus the determination of this matter naturally involves enquiry into the role of *phantasia* in locomotion. Let us begin by examining some conflicting remarks on the place of *phantasia* in locomotion made in the *DA* and, in particular, in the *MA*.

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[225] Wedin (1988), p. 26 (Italics are his emphasis). Cf. D. Frede (1992), p. 281.

(a) Some Conflicting Remarks concerning the Place of Phantasia in the MA

Aristotle has made it clear throughout *DA* III. chs. 9-10 that there is a close link between *orexis* and locomotion. Thus he goes on to conclude *DA* III. 10 by saying,

> In general, therefore, as we have said, in so far as the animal is capable of *orexis* so far is it capable of moving itself; and it is not capable of *orexis* without *phantasia*. And all *phantasia* is either concerned with reasoning or perception. In the latter then the other animals share also. (433b 27-30. trans. Hamlyn)[226]

Although the claim about *orexis* in the above passage is supported by his earlier discussion, it is undeniable that his emphasis on the significance of *phantasia* in locomotion is rather unexpected since Aristotle nowhere in the *DA* makes any detailed examination of the relation of *phantasia* to *orexis* or to locomotion. In the above passage, he introduces *phantasia* as a necessary condition for *orexis*, which is again a necessary condition for locomotion. The passage *per se* appears to suggest that every *orexis*, and so every locomotion, involves *phantasia*.[227] The same picture is suggested in the following *MA* passage:

> That is why it is pretty much at the same time that the creature thinks it should move forward and moves, unless something else impedes it. For the affections suitably prepare the organic parts, desire the affections, and *phantasia* the desire; and *phantasia* comes about either through thought or through sense-perception. (702a 15-19)

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[226] I have replaced Hamlyn's 'desire' and 'imagination' with '*orexis*' and '*phantasia*', respectively.

[227] *DA* 432b 15-17 might be read in the same fashion. This passage initially appears to suggest that either *phantasia* or *orexis* can have a direct relation to animal locomotion without involving each other. This seeming inconsistency, however, does not puzzle us here because in III. 9-10 Aristotle makes it clear that no locomotion can arise without involving *orexis*. That is, since for Aristotle all animals possess a certain type of *orexis* and no locomotion is possible without it, it is clear that *phantasia* alone without *orexis* cannot bring about the motion in question. Thus we should read the passage as "*phantasia* and *orexis* are 'jointly necessary, if not sufficient, conditions' for locomotion", as Nussbaum (1978, p. 221) does. The relevant passage in Greek is "ἀεί τε γὰρ ἕνεκά του ἡ κίνησις αὕτη, καὶ ἡ μετὰ φαντασίας ἢ ὀρεξεώς ἐστιν".

Again, *phantasia* is said to be a necessary condition for *orexis*. And *orexis* brings about locomotion by means of preparing appropriate bodily parts that are necessary for the motion. Thus Aristotle calls *orexis* the proximate reason for locomotion (701a 34). What draws our special attention is that *phantasia* is introduced as coming from either thought or sense-perception. This claim appears consistent with Aristotle's statement elsewhere that makes a division of *phantasia* into the sensitive *phantasia* which belongs to all animals and the calculative *phantasia* which belongs only to rational beings (*DA* 433b 29-30; 434a 6-7). It thus appears that *phantasia* is always related either to sense-perception or thought in arousing *orexis*. In other words, *orexis* cannot be aroused either by sense-perception or thought without involving *phantasia*.

However, there are other passages where Aristotle seems to acknowledge that sense-perception or thought on its own can arouse *orexis*. That is, 'sense-perception and *orexis*' or 'thought and *orexis*', can arouse locomotion without involving *phantasia*.

> For whenever a creature is actually using sense-perception or *phantasia* or thought towards the thing for-the-sake-of-which, he does at once what he desires. For the activity of the desire takes the place of questioning or thinking. "I have to drink," says appetite. "Here's drink," says sense-perception or *phantasia* or thought. At once he drinks. This, then, is the way that animals are impelled to move and act: the proximate reason for movement is desire, and this comes to be either through sense-perception or through *phantasia* and thought.[228] (*MA* 701a 29-36.; cf. 701b 16-17. Underlines are my emphasis.)

Aristotle here appears to say that not only *phantasia*, but also sense-perception and thought can individually arouse *orexis* without necessarily involving one another. Thus the above passage seems to conflict with both passages (*DA* 433b 27-30 and *MA* 702a 15-19) cited

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[228] This last paragraph might be read to suggest that *orexis* for an end comes about 'through sense-perception or *phantasia* plus thought' (ἢ δι' αἰσθήσεως ἢ διὰ φαντασίας καὶ νοήσεως). However, reading it in that way hardly seems to be on a par with Aristotle's earlier remarks in the same passage. That is, if he said that, it would weaken the force of the claim made in the passage. It thus seems that in order for the passage to be consistent as a whole we have to replace *καὶ* with *ἢ διὰ* or read it as 'or', as is sometimes the case.

earlier in that it dismisses the absolute necessity of *phantasia* in locomotion. Moreover, it also conflicts with the later passage (702a 15-19) that seemed to suggest that *phantasia* always comes about through sense-perception or thought.

On the other hand, although it is a matter of further discussion, the 'drink' example in the above passage (*MA* 701a 29-36) primarily suggests that the three psychological capacities are related to *orexis* as capacities for presenting an object, i.e. a drink. On one occasion in the *MA*, Aristotle makes an explicit remark on the role of *phantasia* by grouping it in the same class as other cognitive faculties.

> For both *phantasia* and sense-perception hold the same place as thought, since all are concerned with making distinctions—though they differ from each other in ways we have discussed elsewhere. (700b 19-22)

How are we supposed to understand Aristotle's characterisation of *phantasia* as a capacity for making distinctions? What kind of distinctions does he have in mind? Does he identify the role of presenting an object with the role of making a distinction? These questions will be immediately dealt with in the following section.

(*b*) *A General Account of Phantasia*

Aristotle's treatment of *phantasia* puzzles us in a number of respects. The puzzle begins with the translation of the Greek term 'φαντασία'. It is sometimes translated imagination, but the modern term tends to mean a mental image, or an after-image, which excludes the immediate sensory data obtained from perceiving the external object in its presence.[229] Such a translation does not convey the full extension of Aristotle's usage of the Greek term. For one thing, Aristotle seems to allow that one can have *phantasia* not

[229] Modrak (1986), p. 47 n. 1.; Schofield (1979), p. 105.

only in the absence of an actual activity of sense-perception, but also in its presence (*DA* 428b 26-29).[230] In *DA* III. 3, he defines *phantasia* as 'that in virtue of which a *phantasma* arises in us' (428a 1-2) and, also, as a certain kind of movement (κίνησις) brought about as a result of the activity of sense-perception.[231]

According to Schofield's etymological account, *phantasma* derives from the verb *phantazô* which "means 'make apparent', 'make show', 'present'" and thus the original meaning of *phantasma* suggests 'appearance' or 'presentation' "often with a strong implication of unreality."[232] He also says that *phantasia* which is associated with the verb *phainesthai* (to appear)[233] also derives from the same verb *phantazô*.[234] If a *phantasma* is an appearance, then, according to Aristotle's definition, *phantasia* is primarily the capacity to make such an appearance.[235] However, even if they are thus related to appearance, we should ask whether the appearance is 'a mere appearance (a phantom) or a real appearance (a phenomenon)'?[236]

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[230] Cf. Nussbaum (1978), p. 223; Modrak (1987), p. 88; D. Frede (1992), p. 285.

[231] *DA* 428b 10-17; 429a 1-2; *Somn.* 459a 18-19.

[232] Schofield (1979), pp. 119-120. Cf. Modrak (1987), p. 82. According to Modrak, the ordinary usage of the term '*phantasma*' primarily refers both to 'a purely mental representation' and to 'the appearance produced in a percipient by an external object'. See also D. Frede (1992), p. 280; Ross (1949), pp. 142-143. For more detailed discussion of the usage of *phantasma*, see Nussbaum (1978), pp. 241-255 and Modrak (1987), pp. 82-87. Both of them (Nussbaum, p. 244; Modrak, p. 84 n. 20) note that Plato uses *phantasma* to refer to a sensory appearance.

[233] Schofield (1979), p. 103.

[234] Schofield (1979), p. 105 n. 11.

[235] D. Frede (1992, p. 279) observes that *phantasia* in Aristotle designates '(i) the capacity to experience an appearance, (ii) the on-going appearance itself, and (iii) what appears', i.e. 'the capacity, the activity or process, and the product or result', respectively. Cf. Hicks (1907), note on 428a 2; also, Rees' analysis (1971, p. 497 ff.) of the passages in *DA* III. 3. D. Frede (p. 280) also notes that 'in the case of *phantasia* Aristotle also often switches to *phantasma* to designate the product, and occasionally uses *phantastikon* for the capacity (432a 31)'. Cf. Nussbaum (1978, p. 222) thus comments that there is 'no canonical theory of *phantasia* in Aristotle'. On the contrary, in his extensive examinations of Aristotle's theory of *phantasia*, Wedin (1988, p. 23) strongly claims that *DA* III. 3 offers 'a systematic account of imagination proper' which he thinks can be legitimately called the 'canonical theory of imagination'.

[236] D. Frede (1992), p. 280.

In the *DA*, Aristotle at times appears to use *phantasma* to refer to a mental imagery or representation.[237] Also, his use of the term in such cases as dreaming and remembering seems primarily to be related to the role of mental representation. For the senses are at rest in sleeping and so what appears in one's dream must be a mental image, though it must be based on sensory impressions. And, unlike the senses with which we recognise what is present, "memory relates to what is past. No one would say that he remembers what is present, when it is present ..." (*Mem.* 449b 9 ff.). A 'past' *phantasma*, of course, implies the absence of the object it represents.

The reading of *phantasma* as a mental representation appears suitable in remembering as well (e.g. *Insomn.* 458b 10 ff.). It is conceivable that, for instance, a wolf might begin to move about from the recollection of a piece of meat left from last night's hunt (cf. *Somn.* 456a 24-26). In this case, the distance senses are not immediately at work. In brief, Aristotle appears to maintain that memory or dream is not possible without the information initially obtained by the senses,[238] but sense-perception is not necessarily at work in both cases (e.g. *Mem.* 449b 24 ff.). *Phantasia* in such cases may preserve some, but not necessarily all, of the characteristics of the objects of perception, but it is, as Modrak claims, different from sense-perception in that (i) "it may represent an external object in a distorted fashion" or (ii) it may not represent it at all.[239] In brief, "Φαντασία need not be the immediate result of the stimulation of a sense organ by an external object; αἴσθησις must

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[237] E.g. 431a 17, b 2 ff., 432a 8-9 etc. See Hicks (1907), note on 428a 1; Schofield (1979), p. 104; cf. Nussbaum (1978), pp. 222-223.

[238] Cf. *Somn.* 456a 25-26; *Insomn.* 461a 24 ff.; *Mem.* 450a 26 ff.

[239] Modrak (1986), p. 52; cf. (1987), p. 82 ff. From a similar point of view, Schofield (1979, p. 106; see also p. 115) regards *phantasia* as a distinct faculty of the soul in virtue of which we apprehend 'non-paradigmatic experiences' which he defines as 'experiences so diverse as dreams and the interpreting of indistinct or puzzling sense data, which may be held to resemble the paradigm of successful sense perception in one way or another, yet patently lack one or more of its central features, and so give rise to the sceptical, cautious or non-committal *phainetai*'. His argument is against those who consider it as 'a comprehensive faculty in virtue of which we apprehend sensory and quasi-sensory presentations in general'

be".[240] It appears that Modrak's characterisations of *phantasia*, (i) and (ii), are true of Aristotle's usage of the term.

However, what about the case of a wolf starting to pursue a rabbit that runs across the field at a distance at this very moment? It is not cogent at all to say that the wolf is pursuing the rabbit at the moment because it recollects seeing it during the other night's hunt. It sees or smells the rabbit or hears its movement and it immediately begins to pursue. According to *DA* III. 3, 428b 18 ff., Aristotle thinks that there can be the operation of *phantasia* even while actual perception is at work. Such cases as recollection and dreaming do not involve the operation of actual perception at the time of the animal's starting locomotion. Although, as mentioned, in recollection the animal employs the senses to direct itself to the place at which it aims, the senses are not necessarily related to the animal's initiating its motion. Thus Aristotle appears to conceive two cases of *phantasia* in relation to sense-perception: (i) *phantasia* that is at work in the presence of actual sense-perception and (ii) *phantasia* that is at work in its absence as in recollections and dreams.

In placing sense-perception, *phantasia*, and thought on the same level (*MA* 700b 19-22 cited above), Aristotle makes a backward reference to *DA* III. 3 where he compares the intrinsic features of *phantasia*, sense-perception, and the activities of thought. In a comparison of sense-perception with *phantasia*, he there conceives that sense-perception is always true because it "functions precisely with regard to its object" (428a 11-13),[241] whereas *phantasia* may be either true or false[242] because "there may be some failure of accuracy in the exercise of *phantasia*" (428a 14). The function Aristotle has in mind seems to be the presentation of the external object, whereas the failure is the misrepresentation of

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[240] Modrak (1986), p. 51.
[241] Cf. *DA* 418a 10 ff.; 427b 11-12; 428b 18-19.
[242] 428a 15; a 17-18; b 2-3.

it. He later on says that the presence of the object does not necessarily imply that *phantasia* will represent the object correctly.

In *DA* II. 6, Aristotle distinguishes three kinds of objects, two of which are called objects *per se* (καθ' αὑτά) and one of which is called objects *per accidens* (κατὰ συμβεβηκός). Objects *per se* are either those that are perceived by a single sense (i.e. proper sensibles) or those that are perceived by more than one sense (i.e. common sensibles). The latter include movement, number, figure, magnitude, etc. On the other hand, objects *per accidens* are those which are perceived as things or substances rather than as qualities. Aristotle gives an example of a white object which is seen as the son of Diares (418a 20-23). Seeing an object as white, for instance, is an object *per se* of sight. However, seeing an object as the son of Diares is an object *per accidens* of sight. For the white object might turn out to be a statue of Venus or a meaningless painting on the wall or the like. This indicates that Aristotle seems to rely on his conviction that the whiteness of an object, for example, will be seen as white to one's eyes without any error. That is, he has no doubt that when the senses perceive their objects *per se*, they will *never* or *least of all* make any mistake (see 428b 18-29 cited below). This view appears to lead him to think that since, for instance, seeing a white object as a black object cannot be the failure of sense-perception, there must be some other cognitive capacity that presents it as black. And the role of misrepresentation of an object is thus in general ascribed to *phantasia*.[243]

This tendency appears more explicitly at *DA* III. 3, 428b 18-25. However, we need to note that there is a significant difference between that passage and Aristotle's account given in *DA* II. 6.[244] In II. 6, Aristotle treats common sensibles as the objects of touch, sight, and

[243] Cf. Ross (1949), pp. 142-143.
[244] Cf. Hicks's note on 428b 18.

the like, and appears to regard them as infallible. However, in III. 3 he claims that they are fallible. Aristotle's own words are as follows:

> Perception of the special objects[245] of sense is never in error or admits the least possible amount of falsehood. Next comes perception that what is incidental to the objects of perception *is* incidental to them: in this case certainly we may be deceived; for while the perception that there is white before us cannot be false, the perception that what is white is this or that may be false. Third comes the perception of the common attributes which accompany the incidental objects to which the special sensibles attach (I mean e.g. of movement and magnitude); it is in respect of these that the greatest amount of sense-illusion is possible. The motion which is due to the activity of sense in these three modes of its exercise will differ; the first kind of derived motion is free from error while the sensation is present; the others may be erroneous whether it is present or absent, especially when the object of perception is far off. (428b 18-29)

In the last paragraph, Aristotle claims that distance might be one of the factors which make the representation of *phantasia* erroneous. For example, *phantasia* is false when the figure which appears to be a woman from a distance proves to be a man on close examination, whereas it is true when the figure proves to be a woman even on close examination (428a 14-15; cf. 'the sun example' at 428b 2 ff.).[246] And he elsewhere says that an interval of time can also be one of such factors (*Mem.* 449b 24-30). However, although he regards such factors as reasons for the fallibility of *phantasia*, it is conceivable that they do not always make *phantasia* false. There might be the cases in which *phantasia* represents the objects at a distance as they really appear. On the contrary, even if the external objects at a close distance are present at the moment, it is also possible that *phantasia* might give misinformation about them. If so, the causal distance (which may be temporal or spatial) may or may not make the misrepresentation of objects possible. However, in the above

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[245] The Oxford translation of 'objects *per se*'.

[246] In talking of truth or falsity of *phantasia*, we must not assume that it implies propositional or rational judgements. As noted, for Aristotle such an activity is in virtue of the rational faculty and there are animals without reason (e.g. 410b 23-24; cf. 427b 15-16; 432a 10-11). For this reading, see Turnbull (1994, 323) and Nussbaum's quotation (1978, p. 334) from J. Cooper's unpublished paper, 'Aristotle on the Ontology of the Senses'. Cf. Rees (1971), esp. pp. 498-500.

passage Aristotle does not clearly tell us when the objects can be misrepresented. Thus it makes it difficult to determine on what occasions or by what criterion the objects *per se* would be perceived by the senses rightly other than Aristotle's own words that they would always or almost always appear as they are.

We have talked about the presentation of objects. What do we mean by that? Let us first examine in what way sense-perception presents an object. In *DA* III. 2, Aristotle discusses a distinction made by sense-perception. He there talks of a distinction between sensible qualities, e.g. hot and cold, white and black, and the like.

> Each sense then is relative to its particular group of sensible qualities: it is found in a sense-organ as such and discriminates the differences which exist within that group; e.g. sight discriminates white and black, taste sweet and bitter, and so in all cases. Since we also discriminate white from sweet, and indeed each sensible quality from every other, with what do we perceive that they are different? it must be by sense; for what is before us is sensible objects. (426b 9 ff.; 431a 20-431b 1)

In virtue of sense-perception, the animal is capable of making a distinction between contraries. The contraries mentioned in the passage as the objects of sense-perception are sensible qualities. Different senses have different qualities as their objects; for instance, colours, e.g. white and black, are the objects of sight, whereas flavours, e.g. sweet and bitter, are the objects of taste. Each of the senses discriminates more than one set of different qualities (cf. 418a 14). In the above passage, Aristotle does not appear to think that the presentation of objects is the presentation of things or substances. In fact, he thinks that such a presentation belongs to common sensibles and so it is the operation of all the senses rather than a single sense (419a 18 ff.). Thus each sense individually presents a sensible quality to the animal by making a distinction between the contraries which are proper to each sense.

What about *phantasia* and thought? Does the animal make the same sort of distinction in virtue of them, as it does in virtue of sense-perception? And, if not, what sort of distinction does it make? To put the question differently, granting that *phantasia* and thought must be based on sensory experience, do they also present their objects as sweet or bitter or hot or cold? Aristotle deals with that question in *DA* III. 7-8 in an account of thought in terms of *phantasma*.

> Since it seems that there is nothing outside and separate in existence from sensible spatial magnitudes, the objects of thought are in the sensible forms, viz. both the abstract objects and all the states and affections of sensible things. Hence no one can learn or understand anything in the absence of sense, and when the mind is actively aware of anything it is necessarily aware of it along with a *phantasma*; for *phantasmata* are like sensuous contents except in that they contain no matter. (432a 4-9)

To say that *phantasmata* are 'without matter (πλὴν ἄνευ ὕλης)' is to say that they are abstractions of sensible qualities such as sweetness or bitterness. Considering Aristotle's statement that *phantasia* is 'that in virtue of which a *phantasma* arises in us,' it seems that *phantasia* is a capacity that presents such abstract qualities. However, what does it present them to? It seems that since the capacity for *phantasia* belongs also to irrational animals, *phantasmata* are not necessarily the objects of thought. Thus they might simply be the objects of *phantasia* and their abstractness need not be taken seriously other than as meaning that the objects in question are not present in reality. At any rate, it is clear that both *phantasia* and thought take as their objects the abstractions of sensible qualities.[247]

[247] Cf. Ross (1961), notes on 432a 1-3 and on 432a 3-6. He, however, appears to distinguish them in that thought also manipulates 'concepts which can be grasped by a higher degree of abstraction, such as the concepts of the various moral virtues'.

(*c*) *The Role of Phantasia in Locomotion*

Aristotle's view that sense-perception, *phantasia*, and thought are all related to the presentation of objects is implied at *MA* 701b 16-19 where he says that they all bring about an alteration. However, unlike sense-perception, *phantasia* and thought do not presuppose the presence of the external object, and yet the objects they present produce an actual alteration in the body.[248] We saw earlier that in rational animals, thinking of something does not always lead to action, but their action may be interrupted by the operation of irrational *orexis* (*epithumia*) (*DA* 433a 1-4). And yet, this does not mean that thought does not accompany emotions, e.g. fearful, pleasant, etc., that bring about bodily affections (427b 21-24; *MA* 701b 19 ff.); it does. However, it is not clear whether Aristotle thinks that thought is always accompanied by emotions. On the other hand, as for *phantasia*, he says that "when we merely imagine we remain as unaffected as persons who are looking at a painting of some dreadful or encouraging scene" (*DA* 427b 23-24).

On close examination of *MA* 702a 17-19 and comparing it with Aristotle's remarks on such feelings as pleasure and pain at *DA* 413b 22-24 and 414b 3-5, he seems to have in mind two types of affections, i.e. one in virtue of *phantasia* and the other of *orexis* or, in other words, one related to the arousal of *orexis* and the other to the arrangement of appropriate bodily parts for locomotion. He nowhere works it out explicitly. However, if this is right, it seems to give us another clue about why Aristotle thinks that non-locomotive animals are incapable of locomotion for the sake of an end, despite the fact that they are capable of *phantasia* and *orexis*. Locomotion requires certain affections to arrange appropriate bodily organs necessary for it. However, Aristotle might want to say that, apart from the fact that non-locomotive animals do not have the distance senses, their

[248] *MA* 701b 19 ff.; cf. 703b 18-20; *DA* 429a 23-24.

indeterminate *phantasia* does not bring about the affections that are necessary for arranging the bodily organs for locomotion. If so, it seems that Aristotle ascribes a special role to *phantasia* in locomotion, which is different from its role in other types of motion.[249]

The question we are to ask at this stage is if *orexis* is the proximate reason (αἰτία) for locomotion (*MA* 701a 34-35), what is the proximate reason for *orexis*? In the *DA* III. 7, Aristotle explicitly tells us that the animal must have the capacity to recognise the object as good or bad so as to bring about *orexis* (that again arranges appropriate bodily parts for locomotion) (*DA* 431b 10-12; cf. *MA* 702a 15-19). That is, seeing an object as good or bad is closely related to the question why animals move at all. However, the capacity for recognising objects as what is good or bad belongs only to rational beings. Thus irrational animals (that have only the capacity for sense-perception) perceive objects as pleasant or painful (*DA* 431b 2-9; cf. 431a 8 ff.).[250]

There is no doubt that *orexis* is *orexis* for an object. Therefore, in the first instance, the animal must have the capacity to present an object as an object with some sensible qualities. But perceiving such qualities is not sufficient to motivate animals to move; in addition, the objects must be presented as pleasant or painful. However, it is not yet clear whether the two activities, i.e. perceiving the quality and recognising the object as pleasant or painful, are derived from two different capacities or from one and the same capacity. In 'the drink example' in an *MA* passage (701a 29-36) cited earlier, Aristotle regards the drink as an end, i.e. a for-the-sake-of-which, by which animals are motivated to move. However, it is not the case that they pursue the drink because it is a drink. It is, of course, undeniable that in order for them to move they must have a capacity to present an object to them. But they

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[249] I thus concur with Modrak who thinks that Aristotle wants to assign some additional function to *phantasia* in the account of locomotion. However, I differ from her in characterising its function as 'to focus desire on a particular object' (1986, p. 59 ff.; 1987, pp. 95-99). For a detailed discussion against her position, see below subsection (*d*).

[250] See below for a detailed discussion of these two passages.

must recognise it as worthwhile to pursue, i.e. as a desirable end that is pleasant, not simply as an object as such.

What is the capacity that interprets an object as pleasant or painful? There are some indications that Aristotle might appear to associate with *phantasia* the interpretation of sensible qualities as involving the feelings of pleasure (ἡδονή) and pain (λύπη). The initial association of *phantasia* with those feelings can be found at *DA* 413b 22-24 where Aristotle is concerned with the various faculties of the soul and their relations. There he makes a claim that sense-perception is accompanied by *phantasia* and *orexis* and then reiterates it by inserting pleasure and pain in the place of *phantasia*. The passage can thus be taken to suggest that Aristotle envisages a close connection between *phantasia* and such feelings. Also, the passage at 414b 3-6 appears to support that reading. In that passage, he does not even mention *phantasia* and appears to say that the presentation of an object as pleasant or painful is sufficient for the arousal of *orexis*. If we interpret the two passages in this way, we can also take Aristotle's remarks at *DA* 433b 28-29 and *MA* 702a 15-19 to imply the same thing. He there suggests, without mentioning pleasure or pain, that *phantasia* is the necessary condition for *orexis*, and so perception calls for *phantasia* which again calls for *orexis*. Thus if the animal is not capable of making a distinction between pleasure and pain in perceiving the external object, its *orexis* would not be brought about. It seems that *phantasia* emerges at this stage as a capacity that makes such a distinction.

In effect, since there is no direct evidence that supports the above argument, the association of *phantasia* with the interpretation of an object as pleasant and painful to it appears to be circumstantial. However, I believe that that argument bears some strong points. There is no doubt that there must be the feelings of pleasure and pain in order for *orexis* to be aroused. As mentioned, *orexis* simply does not arise without those feelings.

Aristotle believes that it is not *orexis* itself that brings them about, but the other way around. However, this is not to say that *phantasia* is the only capacity that interprets an object as pleasant and painful. Indeed, there is no reason to think that Aristotle would allow only *phantasia* to play such a role and not other cognitive capacities such as sense-perception and thought. If we can prove that either (or both) of them can play the role on its own, namely, the role of perceiving, or thinking of, an object as pleasant or painful, then we are entitled to conclude that it is wrong to say that it is only *phantasia* that arouses *orexis*. Again, if this reading is right, then Aristotle's placement of 'the feelings of pleasure and pain' and *phantasia* on the same level must be understood as entailing not only that *phantasia* is a capacity for such feelings, but also that sense-perception or/and thought can play the same role. I have so far argued that the role of *phantasia* in locomotion is not to present an object merely as sweet or green or the like, but as pleasant or painful.[251] However, it is still a matter of question whether Aristotle ascribes this role only to *phantasia*. If he does, then we are forced to accept Nussbaum's claim that it is an absolutely necessary condition for locomotion. Let us now turn to Nussbaum's position in more detail.

(*d*) *Nussbaum's Characterisation of Phantasia*

Nussbaum focuses on such passages as *DA* 432a 31 and *Insomn.* 459a 15 ff. (cf. 428b 11-429a 2) where Aristotle emphasises a close connection between sense-perception and *phantasia*. At 459a 15 ff., for instance, Aristotle tells us that *phantasia* is identical with the faculty of sense-perception, but different from that faculty in its being (*einai*). Nussbaum understands the passage as meaning "not that two activities are based on a single capacity

[251] Although *phantasia* may also represent the object as sweet or green etc., what is important is that it represents it as a pleasant or painful thing.

but that two capacities are the same, implying that activities traceable to the one could also, under some description, be traced to the other".[252] In this way, she goes on to conclude that *phantasia* in Aristotle means 'appearing' or 'seeing as' in contrast to 'images'; that is, she regards the role of *phantasia* as interpreting the sensory impressions. She understands sense-perception as that which presents an object and *phantasia* as that which interprets it and goes on to claim that *phantasia* must be involved in every animal locomotion.

Nussbaum clearly notes that for the animal to be capable of locomotion it must have some capacities that present an object and, also, that interpret it as what is or is not desired.[253] However, she seems to think that the external object perceived by the senses is simply presented as an object which has no character of its own, whereas *phantasia* interprets its characters as *x* or *y*. Thus, by *x* or *y* Nussbaum means general sensible qualities. She thinks that characterising it as 'seeing an object as a thing of a certain sort' conveys the implication that the object is the object of pursuit or of avoidance.[254] However, her characterisation of *phantasia* is not quite clear enough to show the role Aristotle assigns to it. For the animal's seeing an object as 'an object of a certain size'[255] does not explain why the animal should move in place. As repeatedly stressed, no locomotion would arise without the feeling of pleasure or pain. Again, for Aristotle *orexis* is *orexis* for something pleasant. In other words, the animal's *orexis* is not aroused by its seeing an object as merely an object three inches long or a red object or the like, but by seeing it as an object of pleasure or pain. Perceiving sensible qualities without involving such a feeling does not lead the animal to locomotion. Thus in order for the animal to pursue what is pleasant and to avoid what is painful, it must have some capacity that presents an object as pleasant or

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[252] Nussbaum (1978), p. 235.
[253] Nussbaum (1978), p. 232; see also, (1983), p. 137.
[254] Nussbaum (1978), p. 246.
[255] Nussbaum (1978), p. 249.

painful. Thus we have to characterise the role of *phantasia* as the awareness of an object not simply as a thing of a certain sort, but, more specifically, as a thing of a pleasant or painful sort, as argued in the previous section.

As noted, Nussbaum's characterisation of *phantasia* is to distinguish its role from that of sense-perception so that she can go on to claim that the animal must have both capacities in bringing about locomotion. In this way, she claims that *phantasia* is an absolutely necessary condition for locomotion. Supposing that the role of *phantasia* is to interpret an object as a thing of a pleasant or painful sort,[256] her argument seems to go as follows: firstly, when sense-perception is at work, it presents an object to *orexis*. However, it 'is, by itself, insufficient to present the object in such a way that the animal is moved to act'.[257] Thus, there must be something that interprets it as pleasant or painful. In the animal that is capable both of sense-perception and *phantasia*, if the role of sense-perception is to present the sensible qualities of an object as such, it seems that it is *phantasia* that interprets the object as pleasant or painful. On the other hand, when sense-perception is not at work, *phantasia* in locomotion cannot merely present an object without also interpreting it as pleasant or painful. Thus it does a double job.[258]

However, it is to be noted that, however plausible Nussbaum's argument may sound, it is made at the expense of two important points. Firstly, it contradicts Aristotle's denial of *phantasia* to some locomotive animals.[259] If he does indeed deny this, then it is plain that *phantasia* is not absolutely necessary to arouse *orexis* and so locomotion for the obvious reason that such animals only have sense-perception without *phantasia* and are still locomotive. Secondly, as a result, it also rejects the possibility that Aristotle might have

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[256] As noted, Nussbaum does not construe *phantasia* in this way.
[257] Nussbaum (1978), p. 256.
[258] Nussbaum (1978), pp. 259-260.
[259] Cf. Nussbaum (1978), p. 236

envisaged that sense-perception or/and thought might arouse *orexis* without involving *phantasia*. These points will be discussed in Section 2. For the moment, let us examine Modrak's discussion of *phantasia*.

(*d*) *Modrak's Characterisation of Phantasia*

Modrak has suggested that the role of *phantasia* in locomotion is to enable the agent to select 'with respect to an object of satisfaction'.[260] She refers to the *MA* passage that reads as follows:

> I need covering; a cloak is a covering. I need a cloak. What I need, I have to make; I need a cloak. I have to make a cloak. And the conclusion, the "I have to make a cloak," is an action. And he acts from a starting-point. If there is to be a cloak, there must necessarily be this first, and if this, this. And this he does at once. (701a 17-22)

All animals need to make a distinction between what is pleasant and what is not and so they give up what is painful and go for what is pleasant. Thus, before animals decide to pursue what is pleasant in virtue of the appetitive faculty, there should be something that discriminates what is pleasant from what is not. It does not matter at this stage whether the 'something' is a capacity to interpret the object wrongly or not, since once animals realise that they were deceived by a false, or wrong, presentation and so they were pursuing something which is indeed painful, they will immediately stop pursuing it.

Modrak argues that there is still something missing, i.e. something that makes animals go for this one, but not for that one. The example given in the above passage is a rational choice made by human beings. And yet it is to be noted that it is a choice between what is good or bad (or what is pleasant or painful), but not between things that are equally good or

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[260] Modrak (1987), p. 96.

pleasant. The process involved in the decision to make a cloak starts from one's need for a covering. I feel cold, I need to wear something to make myself warm, a cloak is such a something, and therefore I have to make a cloak. In this account, reasoning seems to be involved, i.e. choosing a cloak. However, the process between my feeling cold and the decision to wear something might be rephrased as follows: I feel cold, feeling cold is painful, and, therefore, I need something warm. The last stage of this process "I need something warm" is the choice of avoiding pain and pursuing pleasure. Thus the phrase "what I need, I have to make" needs to be understood as meaning "what I feel to be pleasant, I pursue". However, it is doubtful that Aristotle thought that it was necessary to consider the question why animals go for what is pleasant. When I feel pleasant about something, the decision to pursue it is already made. I do not have to think again that this pleasant thing will be pleasant. In effect, it does not matter whether a cloak or another kind of garment is warmer, in so far as I can avoid the feeling of pain, i.e. feeling cold.

If the pronoun 'I' confuses us, then let us take an example of a wolf. A wolf feels cold, feeling cold is painful to it, warming is pleasant, and so, it desires to be somewhere warm. We do not have to think that there is any reasoning involved in this process since a wolf is, of course, not rational. It does not matter whether the warm place is a cave or a deserted house in a mountain. The wolf's *orexis* does not hesitate to make a choice between them. Modrak, however, appears to think that it does.

Phantasia seems to focus desire on a particular object in a way in which neither perception nor thought does. *Phantasia* provides the "something else" that explains the agent's choice. Suppose a hungry animal is looking for food and discovers two edible fruits, either of which, if eaten, would satisfy her desire. She chooses one of them and eats it. While it is certainly true that she would not have eaten the fruit had she not seen it or had she not been hungry, the piece of fruit she chooses is not uniquely determined by these factors. For some reason, a particular piece of fruit appealed to her more than any other. Perhaps certain

features of its appearance called up especially pleasurable sensations; perhaps its scent produced an intrinsically pleasant perception of sweet nectar (cf. *E.N.* 1174b 15-1175a 1).[261]

Modrak clearly notes that animal's locomotion is directed to a pleasant object. She thus says elsewhere that "To move an animal, desire must be aroused and focused on a particular object",[262] but she ascribes to *phantasia* the unique role of focusing animal's attention on the object. This seems to be the reason for her claim that *phantasia* is involved in animal's selection or choice between two pleasant objects.

We have to attend to the fact that Modrak is concerned with two pleasant or good objects. Thus, for her the capacity for making a selection arises as a problem. However, we have to ask whether such a capacity can be a problem for Aristotle in his account of *animal* locomotion as a whole. As may be well be noted, in *EN* III. 3 Aristotle makes it clear that he does not wish to ascribe the capacity for choice to irrational animals (1111b 12 ff.) nor to children (cf. 1111a 26-b 10). Moreover, Aristotle's discussion of choice in the chapter concerns either what is good or what is bad (1112a 3 ff.). Modrak's discussion of the capacity for 'selection' cannot be identified with Aristotle's 'choice'. For she ascribes the capacity also to irrational animals and her 'selection' seems to be a selection between two pleasant objects. Strictly speaking, for Aristotle, the animal's pursuing what is pleasant and avoiding what is painful is due to its capacity for making a distinction, rather than, a selection. To Modrak's question why a hungry animal selects this fruit rather than that one, Aristotle would answer that this fruit appears pleasant to the animal, whereas that one appears unpleasant or painful. Again, for Aristotle there seems to be no question about why the animal selects this fruit rather than that one despite the fact that both appear pleasant

[261] Modrak (1987), pp. 96-97; cf. (1986), p. 59.
[262] Modrak (1986), p. 59.

nor does there seem to be the question about why the animal feels more pleasant about this fruit and less pleasant about that one.[263]

Modrak's worry is, as shown in the passage cited above, that the relation between *phantasia* and *orexis* does not seem to explain the reason for *orexis* focusing on a particular object. Thus she thinks it necessary for the animal to have some capacity that inspires 'the animal's desire and channels it in a particular direction'.[264] She is thus led to think that *phantasia* plays that role of focusing *orexis* on a particular object as well as the role of providing the information about the object. However, for Aristotle 'the particular direction' is ascribed to the nature of *orexis* itself and it does not require any other capacity in leading the animal to a particular object. Unfortunately, he does not explain why or how, but he rather simply thinks that animals either pursue or avoid according to whether objects are presented as pleasant or painful, respectively. For Aristotle *orexis* simply pursues what appears pleasant to it when the distinction is made by other cognitive faculties (cf. 414b 6). He hardly seems to think that *orexis* would hesitate to choose what is pleasant or what is not. Indeed, for Aristotle to ask why *orexis* pursues what is pleasant, but not what is painful, is to ask why "Nature never makes anything without a purpose and never leaves out what is necessary" (432b 21-22) or why "Nature does nothing in vain" (434a 30). However, since for him all animals that exist by Nature pursue "what is the best and the end of the things that lead up to it" (*Ph.* 195a 23-25),[265] he does not think it necessary to question why it does that way. Aristotle would say that *orexis* pursues 'by Nature' what is pleasant and ensures the survival of the animal.[266]

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[263] In effect, if two objects are equally pleasant, the choice is indifferent and, if they are not, it is obvious which of them the animal will choose. Thus this seems to be a pseudo-problem.
[264] Modrak (1986), p. 59.
[265] Cf. *DA* 434a 31-32; *MA* 700b 24 ff.
[266] Cf. Charles (1984), p. 86 ff.

IV. 2 *Sense-perception and Thought without Phantasia*

Just as the difference between plants and animals is due to the former possessing the nutritive faculty of the soul only and the latter possessing an additional capacity (i.e. the capacity for sense-perception), it is clear that for Aristotle the difference between what is locomotive and what is not must be due to a psychological faculty they possess. We saw in the preceding chapter that although two types of animals are said to have the sensitive faculty, Aristotle indeed attributes two different types of capacy to them. That is, the sensitive faculty of locomotive animals entails the capacity for smelling, hearing, and seeing, whereas that of non-locomotive animals does not. Although the possession of the appetitive faculty is also closely related to the capacity for locomotion, it is not a decisive faculty for locomotion since the animals which do not move also have the faculty. We also saw that there are two different classes of animals that have different capacities in virtue of the same sort of faculty because one of them has a higher faculty that the other does not. For instance, the lower faculties that are subsumed under the locomotive faculty tend to be geared in the way in which the locomotive faculty is best actualised (so that the animal maintains its life). In the same way, we might also expect that *phantasia* in different classes of animals might play different roles according to whether the animals have the locomotive faculty or not. With reference to *phantasia*, we are chiefly concerned with two questions: firstly, whether all the animals, i.e. non-locomotive animals as well as locomotive animals, possess it and, secondly, whether it is involved in every locomotion. We now turn to examine Aristotle's notorious statements in which he appears to say that some animals do not have *phantasia*.

(a) *Aristotle's Denial of Phantasia to Some Locomotive Animals*

Aristotle's introduction of two types of *phantasia*, i.e. the sensitive (αἰσθητική) *phantasia* and the calculative or deliberative (λογιστικὴ) *phantasia*, appear rather abruptly at *DA* III. 10, 433b 29-30 without any previous discussion. He gives an account of them in the subsequent chapter as follows:

> *Phantasia* concerned with perception, as we have said, is found in other animals also, but that concerned with deliberation in those which are capable of reasoning (for the decision whether to do this or that is already a task for reasoning ...) (434a 6-8. trans. Hamlyn)

Aristotle here appears to ascribe the sensitive *phantasia* to whatever is capable of sense-perception and the calculative *phantasia* to rational beings (433b 29-30; 434a 6-7). Thus, unlike Hamlyn, the Oxford edition goes on to translate as 'all animals' 'ἄλλοις ζῴοις' in the above passage quoted and 'ἄλλα ζῷα' at 433b 29-30. However, in accepting the translation as it stands we have to consider a couple of points implied in it: firstly, it implies that the sensitive *phantasia* belongs also to non-locomotive animals. However, considering that Aristotle ascribes them the indeterminate *phantasia*,[267] we first need to determine whether the sensitive and the indeterminate are one and the same *phantasia* or different from each other. And, secondly, the translation appears to rule out the possibility that Aristotle might have acknowledged the existence of some animals that do not have *phantasia*. Is this right? We shall at once turn to consider whether the implications are just.

Aristotle at times appears to deny the capacity for *phantasia* to a certain class of locomotive animals. The discussion of this matter is crucial because, if it proves true, it will be the primary ground for rejecting not only the Oxford translation but also Nussbaum's

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[267] See Ch. III. Sec. 2 (*b*).

thesis that *phantasia* is always involved in locomotion.[268] Let us read one of the passages that might be taken to deliver such a message.

> Lastly, certain living beings—a small minority—possess calculation and thought, for (among mortal beings) those which possess calculation have all the other powers above mentioned, while the converse does not hold—indeed (1) some live by *phantasia* alone, while (2) others have not even *phantasia*. (415a 8-11. Numbers are mine.)

Since Aristotle is here concerned with rational beings in contrast to irrational beings, it is expected that he is making the same sort of contrast in (1) and (2). If so, since the criterion of distinguishing the former from the latter is whether they have rational capacities, the *phantasia* in both cases should be the calculative *phantasia*.[269] Then, the 'others' in (2) is irrational animals and the paragraph means that "there are other animals that do not have the calculative *phantasia*". However, the 'alone (μόνη)' in (1) raises a difficulty in maintaining such an interpretation. (1) is surely an exaggeration for Aristotle maintains that if something is to be alive, it must have, at least, one faculty which enables it to be alive. That is, as we saw earlier, whatever has life must have the capacity for nutrition which is the primary condition for life. And, if something is to be an animal it must also have the capacity for sense-perception in addition. On the other hand, if anything has a higher faculty, then it must also have the lower faculties since Aristotle maintains that the higher faculty subsumes the lower faculties (Ch. III. 1 (*a*)). Thus it is an impossibility that there should be animals that have *phantasia* only without also, at least, having the capacity for nutrition, the primary sense of touch, and so on. If so, the animals in (1) are irrational animals and, most likely, non-locomotive animals that have those primary capacities, rather

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[268] Nussbaum (1978), pp. 232-269.

[269] Nussbaum (1978, p. 236), following Ross (1961, note on 413b 33), contends that *phtharta* (perishable beings) "may well include plants, so the statement cannot be taken as evidence that Aristotle believed there are animals that lack *phantasia*".

than rational animals, as opposed to our initial assumption above. For if they are rational animals, then it is difficult to see what the 'alone' means, even if we allow that Aristotle there presupposes the primary capacities. That is, again, if they are rational animals and so the *phantasia* in (1) refers to the calculative *phantasia*, then (1) does not make any sense because for Aristotle there can be no rational animals that have the calculative *phantasia* without the sensitive *phantasia*. When we use the word 'alone', we tend to ask 'without what or who?', i.e. '*phantasia* alone without what?' The calculative *phantasia* alone without the sensitive *phantasia* cannot be present in Aristotle's terms (see e.g. 434a 2-5) because there cannot be the rational faculty without subsuming other lower faculties and so there cannot be the calculative *phantasia* without the sensitive *phantasia*.

Thus the sensitive *phantasia* alone without the calculative *phantasia* does read better and seems perfectly reasonable since, as noted, there are animals which do not have the latter without the former. Granting that in (1) Aristotle refers to those animals that do not have the calculative *phantasia*, (1) reads that "there are animals that have the sensitive faculty without the calculative faculty also", whereas (2) is construed as saying that "others do not even have the sensitive *phantasia*". If Aristotle maintained that there cannot be any animals without the sensitive *phantasia*, then this interpretation would not be a reasonable alternative. And both statements would be regarded as miswritten or, at any rate, would remain mysterious. However, as we shall see shortly, since he allows those animals that do not have the sensitive *phantasia*, the interpretation of the *phantasia* both in (1) and (2) as the sensitive *phantasia* does not seem to give us any trouble.

There is another passage that presents an explicit denial of the ascription of *phantasia* to some animals. Aristotle in III. 3 writes,

If actual *phantasia* and actual sensation were the same, *phantasia* would be found in all the brutes: this is held not to be the case; e.g. it is not found in *ants or bees or grubs*. (428a 9-11. Italics are my emphasis)

There is controversy concerning how to read the last paragraph about the examples of the animals that do not have *phantasia*. Some read it as 'μύρμηκι μὲν ἢ μελίττῃ, σκώληκι δ' οὔ',[270] whereas others do as the above passage.[271] Hicks, on the other hand, takes Aristotle to deny *phantasia* to all the examples mentioned, but goes on to argue that he is denying to the insects "not any and every kind of *phantasia*, but *phantasia* as the developed faculty which he is here seeking to define".[272] He seems to regard the examples given in the above passage as the 'imperfect animals' to which Aristotle ascribes a vague sort of *phantasia* in *DA* III. 11. If so, he is wrong because the above examples are not non-locomotive animals; some, if not all, of them are no doubt locomotive animals. For instance, since a bee has eyes, i.e. a distance sense, (see *PA* 683a 29-30) and, also, *orexis*, it is capable of locomotion towards an end at a distance. Thus it hardly seems plausible to regard all the insects in the above passage as the non-locomotive animals dealt with in *DA* III. 11.

On the other hand, referring to 433b 31-434a 10, Ross comments that Aristotle ascribes to all animals the sensitive *phantasia*,[273] but, nonetheless, he seems to say that Aristotle would deny *phantasia* to grubs 'which he recognizes as answering to eggs'.[274] There is some evidence that indicates that Aristotle grants *phantasia* to the bee.[275] However, we do not have any direct textual evidence that enables us to refute the literal reading of the denial of *phantasia* to the ant. Aristotle at times seems to classify the ant in the same group as the

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[270] Cited from Hamlyn (1993, p. 54). Hamlyn, Ross (1961, note on 428a 11), Nussbaum (1978, p. 236), and Schofield (1979, n. 35) accept this reading, i.e. 'it is found in ants and bees, but not in grubs'.

[271] E.g. the Oxford translation and Hett (1957).

[272] Hicks's note on 428a 10; also, on 415a 10 and 434a 1. I have replaced Hick's imagination with *phantasia*.

[273] Cf. Ross (1961), note on 413b 22-23.

[274] Ross (1961), note on 428a 11.

[275] Read *Met.* 980a 28-980b 25 where he ascribes the capacity for memory to the bee in relation to *Mem.* 451a 15 ff. where he defines the capacity as 'the having of *phantasma*'.

bee (e.g. *PA* 650b 24-27; 683a 3-7), though there is a difference between the two (678b14-18).[276] It is not clear whether we have to accept the ant as being as intelligent as the bee and so as capable of memory which entails the capacity for *phantasia*.

If we follow Hicks's reading, then the *phantasia* denied to some locomotive animals need not be the sensitive *phantasia*, but the calculative *phantasia*. On the other hand, if we follow Ross's reading, then whether both types of *phantasia* can be denied to some locomotive animals depend on the status of grubs. In effect, as stated, Ross seems to understand grubs as motionless eggs that might have the primitive *internal* bodily locomotion (cf. 665b 2-5). But he does not seem to have in mind the primitive type of locomotion, i.e. motion in space without an end, which Aristotle ascribes to non-locomotive animals. Ross gives references to *HA* 489b 12-13 and *GA* 733a 1-2 in which Aristotle introduces grubs in comparison with eggs. However, even if it were true that Aristotle denies *phantasia* to 'all' the grubs, he would not agree that they are as motionless as eggs. For he admits that some grubs are capable of locomotion. At *HA* 489b 16-17, Aristotle explicitly notes that "Of the grubs, some are from the first capable of movement, others are motionless." Furthermore, in *HA* V. 19 where he is chiefly concerned with grubs, he also says that even the same grub might be capable of locomotion at one stage, but not at another stage, namely, the grub in the stage of a pupa is motionless (551b 1-5). It thus seems that the denial of *phantasia* to the grub has nothing to do with whether it is capable of locomotion or not. If so, since *phantasia* is denied to some locomotive animals, i.e. locomotive grubs, it then seems to follow that Nussbaum's thesis that Aristotle appears to imply that *phantasia* is an absolutely necessary condition for locomotion is not acceptable. Her argument is, primarily, based on such passages at *DA* 432b 15 and 433b 26-30 where

[276] Cf. Schofield (1979), nn. 35, 55; Hicks's note on 428a 10.

Aristotle appears to emphasise the involvement of *phantasia* in locomotion. Thus, rejecting Nussbaum's thesis will naturally raise a doubt about the credibility of those passages. Although it is not yet clear at this stage why Aristotle thinks that some locomotive animals are capable of locomotion without *phantasia*, his denial of *phantasia* to them appears unquestionable and so it strongly suggests that it is possible for some animals to be locomotive without it. Our discussion so far has shown that, although Aristotle at times appears to claim that *phantasia* is common to all animals in so far as they have the capacity for sense-perception and that every locomotion requires the involvement of it, he still leaves room for the possibility that such claims are not exceptionless.[277]

We still have to consider another reading of 'the grub example' passage. Hicks's translation is, as shown, not acceptable since it leads us to think that Aristotle would allow that the bee can start its locomotion from its memory, i.e. from the operation of *phantasia*. For, granting that the ant is also capable of memory, it will also have *phantasia*. Moreover, it is clear that both types of insects have eyes and therefore for Aristotle they must be capable of locomotion for the sake of an end. On the other hand, considering that he elsewhere tells us that some animals do not have the capacity for memory, though without specific examples (*Mem.* 450a 14 ff.; *Met.* 980a 28-29), it is still conceivable that he is thinking of some animals that do not have the capacity for *phantasia*. However, this is not any decisive evidence that supports the claim that Aristotle denies *phantasia* to some locomotive animals. The immediate evidence is rather the grub that hardly seems to have eyes or any other distance senses, but is, nonetheless, locomotive.

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[277] Hicks (note on 415a 10) supplies other passages that suggest Aristotle's denial of *phantasia* to some animals. He writes, "... cf. 428a 21 τῶν δὲ θηρίων οὐθενὶ ὑπάρχει πίστις, φαντασία δ' ἐν πολλοῖς, and *ib.* 23 τῶν δὲ θηρίων ἐνίοις φαντασία μὲν ὑπάρχει, where ἐνίοις and πολλοῖς imply that φαντασία is not universally found. This is true, in so far as the term 'φαντασία' is limited to percepts retained. But it is not in this sense of *φαντασία* that (in 433a 11 sq. and 434a 4) it is said to be implied in all *αἴσθησις*."

Aristotle's examples of stationary animals at *GA* 715b 17-20 include not only the testaceans, but also some other animals that he does not clearly exemplify. It is not clear whether he would include the grub into the group since the grub is not a stationary animal that lives by clinging to the external object. However, since it does not have the distance senses, it seems that its locomotion must be indeterminate. If so, it is one type of non-locomotive animals and it must have, at least, the indeterminate or vague type of *phantasia*, according to *DA* III. 11. To recapitulate, Aristotle in the chapter claims that non-locomotive animals have the indeterminate *phantasia* because of their incapacity for determinate locomotion. We, on the other hand, saw that the indeterminacy of their motion explains their lack of distance senses. But it is not yet excluded that the grub might have the *phantasia* that works jointly with the capacity for sense-perception, i.e. the sense of touch, to arouse *orexis*. However, since it lacks the distance senses, it cannot fix its aim on a particular object. If so, the *phantasia* denied to the grub is primarily the one that is combined with the distance senses that allows the animal to move towards a specific end that is at a distance. It then follows that Aristotle might have distinguished the indeterminate *phantasia* from the sensitive *phantasia*, when he denies the latter to the grub that is incapable of determinate locomotion. Thus, according to this reading, the thesis that *phantasia* is always necessary in the arousal of locomotion is not necessarily rejected by Aristotle's denial of *phantasia* to the grub. We need to specify what kind of *phantasia* is denied to it: it is the sensitive *phantasia* (not to mention the calculative *phantasia*) that is associated with the distance senses that allow the animal to perceive objects at a distance. Lacking the appropriate sense organs, the grub's *phantasia* does not represent an object at a distance and does not move towards that very object. Once again, according to this reading, Aristotle's denial of *phantasia* to the grub does not necessarily dismiss the thesis

that *phantasia* is always involved in the arousal of locomotion. The rejection of the thesis can still be approached by the examination of sense-perception or/and thought that directly represent an object as a thing of pleasure or pain. In effect, the following discussion of the case of smelling can be presented as such a rejection.

(*b*) *Sense-perception without phantasia*

At this stage, we need to recall our earlier discussion of the senses. Aristotle thinks of the sense of touch as primary in the sense that it is the sense for food (414b 6-9). On the other hand, the distance senses (seeing, smelling, and hearing) are not directly related to nutriment (414b 9-10), although they certainly have something to do with obtaining food (cf. *Sens.* 436b 19-437a 3; 441b 24 ff.). Since those animals that do not have them can still survive and so they are not absolutely necessary for their survival, Aristotle says that they are for well-being rather than being. However, he again says that the distance senses necessarily belong to the animals that are capable of motion in space (*DA* 434b 23-27); that is, the distance senses are necessary for their survival given that they move in space. All the five senses including the contact senses have the distinction-making capacity in common. For example, touch makes a distinction between different tactile qualities (418a 14-18), sight, between various colours (418a 26 ff.), hearing, between what is flat and what is sharp (420a 26 ff.), and the like.

On one occassion in the *DA*, Aristotle makes an analogy between such an activity of the senses and the activity of thinking. He says,

> To perceive then is like bare asserting or thinking; but when the object is pleasant or painful, the soul makes a sort of affirmation or negation, and pursues or avoids the object. To feel pleasure or pain is to act with the sensitive mean towards what is good or bad as such. Both avoidance and appetite when actual are identical

with this: the faculty of appetite and avoidance are not different, either from one another or from the faculty of sense-perception; but their being is different. (431a 8-14; cf. 414b 1 ff.)

It is obvious that before *orexis* is evoked, there must be something that recognises the object as either pleasant or painful. Since *orexis* is of what is pleasant (414b 6) the animal with *orexis* pursues pleasure and avoids pain. The above passage reads as if sense-perception is that which distinguishes the object as pleasant or painful and there is no mention of *phantasia*. Aristotle here suggests three activities in the process leading to locomotion: (i) feeling pleasure or pain, (ii) making a sort of affirmation or negation, and (iii) pursuing or avoiding. The last activity is clearly ascribed to *orexis*. As for the first two activities, Aristotle appears to say that they are one and the same activity, e.g. feeling pleasant is itself making a sort of affirmation. It seems that if the capacity for (i) is ascribed to sense-perception, it would appear that sense-perception can at once arouse *orexis*, and so locomotion, without necessarily involving *phantasia*. For instance, if, when a dog sees something, it sees it as a white or black thing and, also, as a pleasant or painful thing, then the involvement of *phantasia* in locomotion does not appear to be absolutely necessary. Aristotle does seem to maintain this view in the case of smelling.

Now let us examine the case in detail. Primarily, saying that *phantasia* works when animals are not perceiving with their senses suggests that there is no reason to think that *phantasia* is *always* working together with sense-perception in perceiving an object as pleasant or painful (428a 5 ff.). The following discussion will show that this is an idea Aristotle himself maintains. He says that "the distinguishing characteristic of smell is less obvious than those of sound or colour" (421a 8-9) or taste (a 30-b 2) for the reason that human beings have a limited capacity for distinguishing smell, a capacity which is inferior to that of other animals (421a 9-26). That there is a difficulty in defining the objects of smell is

a worrying matter for Aristotle because without being able to define the objects, it will be also difficult to define the sense organ by which we perceive them.[278] However, he finds a way to resolve the problem by making an analogy of the objects of smell with those of taste. He thinks that smell and taste might have objects that can be called by the same name in virtue of the same sort of quality, namely, the objects of both may be called sweet, pungent, acid, etc.[279] In *Sens.* ch. 5, Aristotle makes a division of odours into those that are pleasant or unpleasant *per se* and those that are pleasant or unpleasant *per accidens*. He writes,

> One class of odours, then, is that which runs parallel, as has been observed, to savours: to odours of this class their pleasantness or unpleasantness belongs incidentally. For owing to the fact that savours are qualities of nutrient matter, the odours connected with these are agreeable as long as animals have an appetite for the food ... The other class of odours consists of those agreeable in their essential nature, e.g. those of flowers. For these do not in any degree stimulate animals to food, nor do they contribute in any way to appetite; their effect upon it, if any, is rather the opposite. ... Of this species of odour man alone is sensible; the other, viz. that correlated with tastes, is, as has been said before, perceptible also to the other animals. And odours of the latter sort, since their pleasureableness depends upon taste, are divided into as many species as there are different tastes; but we cannot go on to say this of the former kind of odour, since its nature is agreeable or disagreeable *per se*. (443b 19-444a 8)

Let us first have a look at the second class of odours. These odours are pleasant or painful *per se* without reference to the state of the perceiver. In other words, whether the perceiver feels hungry or not, it perceives the objects as pleasant or unpleasant, or painful. Thus they are not directly related to the nutriment of animals. For instance, the perceiver comes to have a feeling of pleasure from smelling the odours of a rose, not because there is some other capacity such as *phantasia*, but because the odours themselves are pleasant. This kind of feeling of pleasure arising from smelling the odours of flowers does not, however, 'contribute in any way to appetite', which implies that the perception of them will not lead

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[278] For a discussion of this problem, see Johansen (1998), pp. 226-228.
[279] *Sens.* 443b 9 ff.; cf. *DA* 421a 27 ff.; 426a 14-19.

to locomotion. Aristotle conceives that the perception of this class of odours is peculiar to man, but not to other animals (444a 4 ff.), because of the constitution of his brain (a 29-31).

On the other hand, Aristotle also introduces another class of odours that all locomotive animals perceive. This class of odours is that which can be either pleasant or unpleasant in accordance with the state of the perceiver's desire for nutriment. That is, when the perceiver feels hungry, the odours are presented as pleasant to the perceiver. Aristotle does not clearly account for the relation between the perceiver's smelling and locomotion which is invoked by it. However, in an account of non-breathing animals such as fish, he tells us that the sense of smell also belongs to those animals and so they are capable of searching for food at a distance. That is, this class of odours brings about *orexis* in animals and the *orexis* arranges the bodily parts for locomotion. His own words are:

> But that creatures which do not breathe have the olfactory sense is evident. For fishes, and all insects as a class, have, thanks to the species of odour correlated with nutrition, a keen olfactory sense of their proper food from a distance, even when they are far away from it; such is the case with bees, and also with the class of small ants, which some denominate *knipes*. (444b 7-12; cf. *DA* 421b 19 ff.)

This passage implies that the distance senses allow the animal to have some anticipation before its actual locomotion. As discussed in the preceding chapter, an eagle has to know in advance whether the object at a distance will be pleasant or not before it starts to move towards it. Locomotion thus presupposes the perceiver's *orexis* and, also, its *orexis* presupposes the distinction between pleasure and pain concerning the object at a distance. The eagle will neither pursue nor avoid it, if it does not anticipate that the object will be pleasant or painful. And the anticipation is closely related to the state of the perceiver. That is, whether the perceiver would see an object at a distance as a pleasant thing or not

depends on how far the object would contribute to the satisfaction of the perceiver's state of hunger and, also, on whether the perceiver is in the state of hunger or not.

As seen so far, Aristotle conceives that the two classes of odours are pleasant and unpleasant either *per se* or *per accidens*. The odours of a rose which are pleasant *per se* do not necessarily evoke *orexis* for locomotion, whereas the other class of odours calls for the *orexis* of animals in the state of hunger. The former class of odours is a clear example that shows that the animal perceives an object as pleasant without involving *phantasia*, but only by sense-perception. However, this case does not necessarily refute the claim that *phantasia* is necessary for every locomotion unless we show that odours of this sort somehow contribute to the arousal of *orexis* that leads to locomotion. In effect, it is not difficult to show such cases. For instance, a man sees a rose in a garden at a distance, desires to have it on his desk, and moves towards the rose. Although odours that are pleasant *per se* are perceived as such by human beings only, the example is sufficient to show that locomotion does not *always* involve *phantasia*.

What about the class of odours that are perceived as pleasant in accordance with the perceiver's state? Does it also show that *phantasia* is not necessarily involved in locomotion? This question is once again whether sense-perception as such perceives the external object as pleasant or painful. The animal perceives objects as pleasant or unpleasant according to its state. Since the odours of food correspond to the perceiver's feeling hungry, the perceiver will immediately move to get to the food, in so far as she perceives it as pleasant. Aristotle's statement that "animals have an *orexis* for the food" (*Sens.* 443b 23-24) suggests that the presence of *orexis* determines to a certain extent the object as pleasant or unpleasant. Thus Johansen comments on the passage, *Sens.* 443b 19-444a 8 cited above, as follows:

This passage deepens the analogy between odours and flavours as it shows that some odours are also said to be 'pleasant' in relation to flavours. Odours are not just called 'bitter', 'sweet', etc. by analogy to flavours. They are also called 'pleasant' or 'unpleasant' according to whether the corresponding flavour is pleasant or unpleasant. Odours are pleasant whenever flavours are pleasant. Since flavours are pleasant when you would like to eat or drink the flavoured object as nourishment, odours too become pleasant whenever you would like to eat or drink the fragrant object. If you find a sweet flavour pleasant because you would like to eat something sweet, then you will find a sweet odour pleasant too.[280]

According to Johansen's reading, we do not just smell something as sweet or bitter in relation to flavours, but also as pleasant or unpleasant. He seems to attend to the fact that τὸ ἡδὺ and τὸ λυπηρόν generally translated, respectively, as sweet and bitter, in the *Sens.* passage also mean pleasant and painful (or unpleasant). In this way, if to perceive something as sweet or bitter is also to perceive it as pleasant or painful, then there is no need for any other psychological activity, i.e. *phantasia*, to be involved in the arousal of *orexis* since the representation of the external object and the interpretation of it as pleasant or unpleasant are sufficient for evoking *orexis*. Thus the cases of smell and taste appear to suggest that there is no reason for asserting that feeling pleasant or painful is a peculiar activity that belongs only to *phantasia*. In consequence, in understanding the passage of *DA* 431a 8-14 cited earlier, we do not necessarily have to assume that Aristotle is insistent about the role of *phantasia*. That is, animals can dispense with *phantasia* in arousing their *orexis*.

However, it is not clear whether Aristotle wants to apply the same sort of analysis also to the cases of sight and hearing. Indeed, we do not find any conclusive evidence which might suggest that he does. At 431a 8-14 (cited earlier), he contrasts perceiving with thinking and says that "To feel pleasure or pain is to act with the sensitive mean towards what is good or bad as such". If we understand this as meaning that, as thought recognises

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[280] Johansen (1998), p. 229.

something as good or bad, sense-perception also perceives it as pleasant or unpleasant, Aristotle does not seem to allow any room for the involvement of *phantasia*. However, for the present purpose, the analysis of smelling is sufficient to show that *phantasia* is not always necessary for the arousal of locomotion. Let us now turn to the case of thought where I shall try to show that, although it is undeniable that there must be *phantasia* as the representation of objects to thought, thought itself interprets the objects as pleasant or unpleasant or, rather, good or bad.

(*c*) *Thought without Phantasia*

Those who claim that *phantasia* is always necessary for thinking focus on Aristotle's statement that "the soul never thinks without a *phantasma*" (*DA* 431a 17). Thus Nussbaum, for example, claims that Aristotle uses *phantasia* "to explain how it is that the mere thoughts of some object, in the absence of actual perception, can suffice to cause motion".[281] She seems to mean by 'the mere thoughts of some object' the thoughts containing some *phantasmata* as their objects. Thus she goes on to conclude as follows:

> Although he occasionally (e.g., in the "drink" syllogism in *MA* 7) suggests that perception or thought alone could operate with desire to produce action, his considered view seems to be that an extra factor must be mentioned in the account of motion and that there is a single faculty (or a special aspect of the faculty of perception) in virtue of which an animal becomes aware of its object of desire, whether that object is initially presented *via* the senses or by thought. Furthermore, even theoretical thinking must, it seems, go on concurrently with some activity of *phantasia*.[282]

As mentioned earlier, Nussbaum closely relates *phantasia* to sense-perception.[283] In this way, since what has sense-perception also has *phantasia*, she, as a result, rejects the literal

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[281] Nussbaum (1978), p. 239.
[282] Nussbaum (1978), pp. 240-241.
[283] Nussbaum (1978), esp. pp. 234-236.

reading of Aristotle's remarks at 415a 10 ff. and 428a 10 ff. where he appears to deny *phantasia* to some animals. And, moreover, since she thinks that in the absence of perception *phantasmata* are the only objects of the thinking soul, she is led to conclude that *phantasia* is always involved both in perceiving as well as in thinking in order to arouse *orexis*. However, our discussion of smell initially shows that this conclusion concerning sense-perception is wrong. And, indeed, the following discussion of thinking will show that the second half of her conclusion concerning thinking also fails.

We first have to ask in what sense thinking presupposes *phantasia*. It is undeniable that thinking requires some objects in order to contemplate. All the same, all the *phantasmata* require objects initially presented by sense-perception. However, as we saw, there was a case in which sense-perception is not at work and *phantasia* alone does all the work to arouse *orexis*. In such a case, we do not deny that *phantasia* must presuppose the previous operation of sense-perception, i.e. the presentation of objects to *phantasia*, but we say that *phantasia* on its own is at work when the actual operation of sense-perception is not presently going on. In the same way, it is conceivable that, although *phantasia* is necessary for thinking as the capacity for representing *phantasmata* to the thinking soul, thinking might work alone to contemplate the *phantasmata* represented by *phantasia*. The following paradigm might be suggested in relation to our discussion so far:

(i) (Actual) sense-perception —*orexis* — locomotion
(ii) (Actual) sense-perception — *phantasia* — *orexis*— locomotion
(iii) (Idle sense-perception) — *phantasia* — *orexis* — locomotion
(iv) (Idle sense-perception — idle *phantasia*) — thought — *orexis* — locomotion

(i) is presented as a result of the discussion of smell. The 'smell' case shows that there might be locomotion by *orexis* resulted from sense-perception alone without involving *phantasia*. (ii) shows Aristotle's discussion of *phantasia* in the presence of actual sense-perception claimed in *DA* III. 3, which seems to suggest that sense-perception and *phantasia* share the roles of presenting objects and interpreting them. On the other hand, (iii) illustrates such cases as dreams and memories. In those cases, we do not exclude that sense-perception is previously necessary for gathering information about the external objects. However, it is not actually working at the time of dreaming or recollecting. Finally, (iv) suggests the case of contemplation of thought which requires *phantasia* for supplying information in the first instance, but which does not employ its actual operation at the time of contemplating. As *phantasia* in (iii) does not require the actual operation of sense-perception in its manipulating the perceived data, thought in (iv) does not require the actual operation of *phantasia* in its contemplating the data previously supplied by *phantasia*. Thus Aristotle clearly states that "To the thinking soul *phantasmata* serve as if they were contents of perception (and when it asserts or denies them to be good or bad it avoids or pursues them)" (*DA* 431a 15-16).

The following passage again suggests this view. In *DA* III. 7, Aristotle explains the relation between thoughts and the feeling of pleasure and pain in comparison with sense-perception as follows:

> The faculty of thinking then thinks the forms in the *phantasmata*, and as in the former case what is to be pursued or avoided is marked out for it, so where there is no sensation and it is engaged upon the *phantasmata* it is moved to pursuit or avoidance. E.g. perceiving by sense that the beacon is fire, it recognizes in virtue of the general faculty of sense that it signifies an enemy, because it sees it moving; but sometimes by means of the *phantasmata* or thoughts which are within the soul, just as if it were seeing, it calculates and deliberates what is to come by reference to what is present; and when it makes a

pronouncement, as in the case of sensation it pronounces the object to be pleasant or painful, in this case it avoids or pursues; and so generally in cases of action. (431b 2-9)

Aristotle's account of thinking shows a similarity to his earlier discussion of sense-perception. He regards calculation and deliberation as the activities of the rational faculty. And the rational faculty requires *phantasmata* or thoughts as its objects as the perceptible objects in the case of sense-perception. We need to attend to the fact that Aristotle in the passage is saying that either *phantasmata* or thoughts are represented to the rational faculty as its objects. These remarks at once suggest that the actual operation of *phantasia* is not always necessary for thinking other than as a capacity to represent *phantasmata* to the thinking soul at an earlier stage. Thus the *phantasmata* are the objects for pursuit and avoidance that are represented to rational beings.[284] In the above passage, Aristotle explicitly tells us that in perceiving the one that 'pronounces the object to be pleasant or painful' is sense-perception, whereas in thinking it is calculation and deliberation. We saw earlier that Aristotle regards feeling pleasure or pain is analogous to making an affirmation or a negation.[285] Perceiving or thinking pronounces some object as 'pleasant or painful' or 'good or bad' and *orexis* immediately pursues or avoids. All the same, in thinking calculation and deliberation take 'the form of judgment or proposition',[286] as in perceiving the sensory activities such as taste and smell are also making a sort of judgement. However, Aristotle states that the necessary objects in calculation and deliberation are either *phantasmata* or thoughts and thus, as mentioned, he does not exclude the possibility that an activity of *phantasia*, as representing *phantasmata* to the thinking soul, can be previously involved. In this way, Aristotle can offer without necessarily involving the

[284] However, this does not necessarily mean the absence of perception.
[285] See Hicks's note on 431a 8.
[286] Hicks's note on 431b 8.

concept of *phantasia* an account of sense-perception and thought as the capacities for making a distinction between what is pleasant and what is not.

On another occasion, Aristotle goes further to say that *phantasmata* might be absent in some cases of thought activities.

> And because *phantasmata* remain in the organs of sense and resemble sensations, animals in their actions are largely guided by them, some (i.e. brutes) because of the non-existence in them of thought, others (i.e. men) because of the temporary eclipse in them of thought by feeling or disease or sleep. (429a 5-8)[287]

Aristotle here envisages the cases in which animal motion results from adopting *phantasmata* because they are without thought and, also, the cases in which those that are capable of thought might be troubled with operating them properly because of their physiological states. A man may have illusions because of his illness. However, in saying this, Aristotle seems to think that such an example will illustrate why a man does not employ *phantasmata* rather than why he relies on *phantasmata*. He here talks of the sensitive *phantasia* that belongs to those that have sense-perception, not of the calculative *phantasia* that belongs only to rational beings in virtue of their capacity for thinking. However, Aristotle in the above passage appears to think that the man in a state of illness is not capable of adopting *phantasmata* at all in his thinking. That is, in such a case a man thinks without involving any *phantasmata*. It is not clear what Aristotle means here. Does he mean that there might be some thinking that is purely creative so that a man thinks something original without relying on any of his previous experience whatsoever? In any case, the above passage clearly shows that Aristotle acknowledges some cases of thinking that do not involve *phantasmata* and so *phantasia*. In consequence, in the passages where

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[287] See also, III. 3, 428a 23-24. Aristotle there says that "... there are some of the brutes in which we find *phantasia*, without discourse of reason."

he says that there cannot be any judgement without *phantasia* (427b 15; 431b 7-9) and that "the soul never thinks without a *phantasma*" (431a 17), Aristotle believes that *phantasmata* are elements that are as necessary as thoughts in the case of the rational faculty forming a judgement. However, it is clear that we are not entitled to conclude that *phantasmata* are the only objects of thinking.

Our discussion so far suggests that when Aristotle in the *MA* says that *phantasia* holds the same place as sense-perception and thought (700b 19-21), he wishes to ascribe to the former a sort of judgmental capacity as he does to the latter two cognitive capacities. As noted, the judgmental (or propositional) capacity of sense-perception and of thought is the affirmation or the negation of feeling 'pleasant or painful' or of judging 'good or bad'. This implies not only that animals require objects, e.g. the perceptible objects (i.e. the sensible qualities) or the objects of thinking (i.e. *phantasmata* and thoughts), but also that they have such capacities as smelling or tasting or calculating or deliberating that interpret the objects as pleasant or painful. In this sense, Aristotle says that sense-perception, *phantasia*, and thought hold the same place in terms of making distinctions. This line of interpretation also appears consistent with Aristotle's use of *phantasia* in relation to other faculties in other passages of the *MA*.[288]

Summary

In the present chapter, we have focused on the question whether Aristotle maintains *phantasia* as an absolutely necessary condition for *orexis* and so for locomotion. And we have given a negative answer to the question. Our primary enquiry began with the question what are the necessary conditions for the arousal of *orexis*. In arousing *orexis*, there must

[288] E.g. 700b 19-22; 701a 29-b 1; 701b 16 ff. etc.

be two conditions, the presentation of an object and the interpretation of it as a pleasant and painful thing. In effect, the representation of an object is the representation of an object as a certain sort. That is, when seeing a red ball, we perceive it as red or as round in the first instance. Nussbaum thus understands *phantasia* as a capacity to represent an object as an object of a certain sort. However, unless the object is interpreted as what is pleasant or not, *orexis* is not evoked to pursue it. Thus I have argued that the role of *phantasia* must be more than that, i.e. it represents an object not only as a certain thing, but as a pleasant or painful thing.

I have also considered Nussbaum's claim that *phantasia* must be always involved in the arousal of *orexis*. Aristotle's denial of *phantasia* to some animals does not contribute on its own to the rejection of the claim. Nonetheless, it has revealed that he might have distinguished the indeterminate *phantasia* from the sensitive *phantasia*. The former belongs to all animals whether they are locomotive or not and so it is clear that it is not necessarily related to locomotion, whereas the latter belongs to all locomotive animals and is related to the arousal of locomotion. Thus I have examined whether Aristotle envisages some cases in which the presentation of an object as pleasant or painful does not involve *phantasia*. In doing so, we have seen that, in particular, in his discussion of two types of odours he has made it clear that in smelling sense-perception does not necessitate *phantasia* in the arousal of *orexis*, although it still remains unclear whether he holds the same position about the other distance senses. Moreover, his account of thought also leaves room for the interpretation that thought can also arouse *orexis* without the actual operation of *phantasia*, although it seems undeniable that *phantasia* is previously engaged as a capacity to represent *phantasmata* to the thinking soul.

At this stage, it is important to note that our discussion has suggested at least four types of the locomotive faculty, i.e. four groups of psychological capacities that arouse locomotion. In what follows, we shall see the significant implication of this point in relation to the physiological aspect of animal locomotion.

CHAPTER V

THE PHYSIOLOGICAL PICTURE: THE ROLE OF THE *SUMPHUTON PNEUMA*[289] IN LOCOMOTION

In the preceding two chapters, we have examined what kinds of psychological capacities are involved in arousing animal locomotion and seen that Aristotle has in mind four types of the locomotive faculty. The present chapter turns to Aristotle's account of the physiology of locomotion which he, in the *MA*, explains in terms of the conception of the *sumphuton pneuma* (σύμφυτον πνεῦμα, hereafter, *pneuma*).[290]

As seen in Chapter II, the functionalist claims that Aristotle would accept the compositional plasticity of functional states. In relation to Aristotle's biology, the functionalist argues that, if a certain sort of animal is defined in relation to its organs that function in a certain way, then an animal will be that sort of animal whatever the compositions of the organs that serve those functions.[291] On many occasions, Aristotle appears to acknowledge that different species of living beings have different bodily organs, though performing the same function (*HA* 497b 3 ff.; cf. *GC* 321b 17-322a 16). That is, he talks about the blood or the analogous stuff (e.g. *GA* 726b 2 ff.), the heart or an analogous part in some animals (e.g. *MA* 703a 14-16; *GA* 781a 20 ff.), lungs in some animals or gills in others (cf. *Resp.* 476a 22 ff.), mouths of animals or roots of plants (*IA* 705b 7-9), and the

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[289] As we shall see (cf. Peck, 1953, p. 111), there is a difficulty in translating the Greek word *πνεῦμα* into English and so commentators (e.g. Peck, Solmsen, Nussbaum, Freudenthal, etc.) tend to leave it untranslated. I shall follow this practice. It cannot be simply translated as 'breath' or 'air'. On the other hand, although Beare (1906, p. 94, note. 1) is aware of the difficulty, he (p. 120 ff.) translates *sumphuton pneuma* as 'connatural spirit' (see also, his translation of *Somn.*, for example, 456a 11 in the Oxford translation), whereas in an article about the Stoic use of the term Long (1996, p. 229) calls *pneuma* 'intelligent breath'.

[290] This conception of inborn or connate *pneuma* must be distinguished from *pneuma* breathed in by the animal and, also, from the ordinary air which Aristotle sometimes appears to refer to by the term, as will be discussed below. Different uses of the term will be so stated.

[291] See Nussbaum (1978), esp. p. 82 ff.

like. What does Aristotle mean by analogous parts? Does he mean that, as the functionalist argues, they are made of different *materials* from, but function in the same way as, the materials of their corresponding bodily organs? In order to answer this question, we need to ask what Aristotle would say about the constituents of different bodily organs, though performing the same sort of function, in different beings.

In what follows, I shall argue that the functionalist claim is wrong. In Section 1, I shall briefly examine the characteristics of *pneuma* and its involvement in the account of reproduction and sense-perception expounded in Aristotle's biological works. It is often pointed out that the weakness of the arguments based on this conception of *pneuma* is that he did not systematically work it out.[292] It is undeniable that in analysing its role we have to rely on the fragments of his remarks on *pneuma*. Nonetheless, our discussion will primarily suggest that Aristotle thinks (i) that *pneuma* is a significant material or physiological substance in the account of the living being's various activities and (ii) that it has a close relation to the soul-capacities.

These general points will be made concrete in Section II, as we examine (*a*) Aristotle's introduction of *pneuma* as a factor that distinguishes sexes, species of animals, parts of the animal, and even the lives and deaths of the living being; and (*b*) his employment of the conception in the account of locomotion with reference to *orexis*. Once this is done, we shall be able to see that *pneuma* is a necessary *material* element in the living being, without which the living being is not capable of actualising its psychological or living capacities. However, I shall argue, the relationship of the soul-capacities with *pneuma* Aristotle has in mind is far closer than the functionalist maintains. That is, he thinks that the soul-capacities must be actualised in *pneuma*, in which case no other matter than *pneuma* could serve these

[292] E.g. Nussbaum (1978), p. 143.

soul-capacities.[293] We shall also see in detail in what way, although Aristotle thinks that the locomotive faculty of the soul must be actualised in *pneuma*, he still escapes committing himself to the ontological reductionism.

V. 1 *The Conception of the Sumphuton Pneuma*

Commentators have attended to the fact that Aristotle employs *pneuma* as an indispensable conception in explaining various types of animal motion.[294] This section deals with its characteristics as they engage in his accounts of sexual generation and sense-perception. Three points will be made here: (i) *pneuma* is a material or physiological substance, (ii) it belongs only to living beings, and (iii) it has a close relationship with the capacity for living activities. This last point will be further discussed in Section 2 with reference to the question of how to construe the relationships between the physiological substance and the soul-capacity.

(*a*) *The Characteristics of Pneuma*

In *GA* II. 2 in his account of the nature of the semen, Aristotle talks of the semen as a compound of '*pneuma* and water' and *pneuma* as 'hot air (θερμὸς ἀήρ)' (736a 1).

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[293] Since, as noted, the present chapter attempts to verify, on the basis of a specific living activity of the living being, our position against functionalism made in Ch. II, a portion of our earlier discussion will be repeated to revive the reader's memory. I hope that this will be excused.

[294] For Aristotle's use of the conception in animal generation, see Balme (1992), esp. pp. 160-164; Preus (1970), pp. 1-52; (1975), pp. 48-107. For the *GA* text, see esp. II. 3 ff. More references can be found in Freudenthal (1995), p. 106, notes 2 & 3. On the other hand, Beare draws attention to the role of *pneuma* in sense-perception (cf. Peck, 1942, pp. 589-593). He says that "if we could discover all the properties and functions of the σύμφυτον πνεῦμα, we should (from Aristotle's point of view) have penetrated to the inmost secrets of sense-perception" (1906 p. 336; cited after Peck, 1942, p. 593). This view is implicitly challenged by Johansen (1998, p. 92) who points out that "a passage in *De Insomniis* says that the blood plays a role in mediating sense-impressions from the sense-organs to the central sense-faculty *in dreams*". Johansen's remarks might be taken to mean that *pneuma* might not reveal *all* the secrets of sense-perception. On the other hand, Nussbaum notes that *pneuma* plays an important role in animal locomotion. See Nussbaum (1978), pp. 143-164. Cf. Peck (1942), p. 576 ff.; Peck (1953), pp. 117-118; Freudenthal (1995), pp. 134-137. Nussbaum (1978, p. 143) reports that Jaeger and Düring also held this position.

Considering that air is already compounded of the hot and the wet (cf. *GC* 311a 13 ff.), it appears that *pneuma* has more heat than the heat which air already has, as Balme says.[295] It is, however, controversial how much weight we can give to such a characterisation of *pneuma*. Balme takes it as a starting basis and argues that the "*pneuma* is basically atmospheric air," but differs from the latter only in 'levels of purity' because of the influence of the vital heat in the animal.[296] He also thinks that Aristotle 'equates animal heat with fire,' but differentiates them only in degrees. Thus he says that "animal heat need not be an altogether different element from other heat, nor generative heat from the rest of animal heat".[297] He then goes on to claim that although all *pneuma* contains heat, the *pneuma* in the seed is different in that its heat is generative heat. In this way, he seems to think that the *pneuma* in the seed is purer than the *pneuma* in other parts of the body. It is, however, not clear what exactly Balme means by 'less grossly material, purer, or superior'.[298] As it stands, he appears to be saying that the same matter can be purer or superior depending on which part of the body it belongs to and what degrees of the vital heat it possesses (see Sec. 1 (*c*) below). This line of Balme's interpretation of *pneuma* and vital heat is, however, subject to criticism in various aspects.[299]

Aristotle's treatment of *pneuma* is undeniably puzzling. However, there are several points that can be made clear. In an article on *pneuma*, Peck observes two significant characteristics of *pneuma*: firstly, it is inborn or connate air, which must be differentiated from atmospheric air and, secondly, it is material or corporeal.[300] As mentioned, Balme

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[295] Balme (1992), p. 162.
[296] Balme (1992), pp. 163-164; see also p. 71.
[297] Balme (1992), p. 164.
[298] Balme (1992), p. 163.
[299] E.g. Freudenthal's criticism (1995, pp. 109-111) is focused on Balme's identification of 'fire with vital heat'. However, Balme's identification of *pneuma* with atmospheric air is not convincing, either (see below).
[300] Peck (1953), pp. 111-121.

thinks that *pneuma* is basically atmospheric air or inhaled air which comes to have different levels of purity when it is somehow worked upon by animal heat. However, if this were the case, then non-breathing animals would not be able to have *pneuma* in them. But Aristotle has no doubt that they also possess *pneuma*.[301] This point at once suggests that the *sumphuton pneuma* is not the air breathed in from without by the animal, but the connate or inborn air present in the animal from its birth until its death. Moreover, granting that life begins at the very moment of the formation of the embryo, Aristotle's emphasis on the place of the *pneuma* in the heart (which is the first part to be formed in the embryo) implies that it is not the air inhaled by the possessor itself, but that transmitted to it 'either by its mother or by embryo itself'.[302]

On the other hand, Aristotle clearly regards *pneuma* as 'a sort of corporeal or material air' when he talks of *pneuma* as a component of the semen. Once again, it cannot be identified with atmospheric air since he thinks that it is 'more divine' than any other simple bodies (i.e. air, fire, earth, and water). The relevant passage runs thus:

> Now so far as we can see, the faculty of Soul of every kind has to do with some physical substance which is different from the so-called "elements" and more divine than they are; and as the varieties of Soul differ

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[301] *GA* 741b 37 ff.; see also, *Somn.* 456a 11 ff.; *Juv.* 475a 28 ff.; *PA* 659b 14-19; 669a 1-2. Cf. Johansen (1998), p. 250.

[302] Peck (1953), p. 117. Aristotle tells us that *pneuma* is contained in the semen (*GA* 736b 36), whereas his position about the menstrual fluid is obscure. At this stage, the *pneuma* of the foetus seems to come from its father or from both parents. However, Aristotle states that there is nothing material from the semen that contributes to the formation of the embryo since "the semen dissolves and evaporates due to its 'watery nature'" (737a 8-11; cf. 730b 11-15). It thus follows that the *pneuma* comes from the mother. This interpretation appears consistent with his characterisation of the female as the provider of matter. However, this seems misleading. As noted, for Aristotle there cannot be any change *ex nihilo*. This phrase might well be read as a denial of change *simpliciter*. In *Ph.* I. 5 (*GC* I. 2 and 3; *GA* 724a 14 ff.; 733b 24 ff.), Aristotle has shown his sympathy with the Parmenidean thesis that denies the possibility of a becoming out of nothing. At the same time, he also denies a being's passing-away *simpliciter*. Thus, there must be something material remaining even after the semen's evaporation. That is, the semen cannot simply pass the soul onto the menstrual fluid without leaving some matter from the male in it. If it can, then Aristotle inevitably has to acknowledge the soul's separability from the body, to which he does not wish to commit himself. Thus the semen's evaporation does not mean a complete disappearance. If so, it seems that there must remain some matter from the semen which contributes to the formation of the embryo. However, Aristotle does not accept that the matter of the semen is involved in the formation (see e.g. 716a 5 ff.; 729a 9-10; 736a 24 ff.; esp. 730b 9 ff.).

from one another in the scale of value, so do the various substances concerned with them differ in their nature. In all cases the semen contains within itself that which causes it to be fertile—what is known as "hot" substance, which is not fire nor any similar substance, but the *pneuma* which is enclosed within the semen or foam-like stuff, and the natural substance which is in the *pneuma*; and this substance is analogous to the element which belongs to the stars. That is why fire does not generate any animal, and we find no animal taking shape either in fluid or solid substances while they are under the influence of fire; whereas the heat of the sun does effect generation, and so does the heat of animals, and not only the heat of animals which operates through the semen, but also any other natural residue which there may be has within it a principle of life. Considerations of this sort show us that the heat which is in animals is not fire and does not get its origin or principle from fire. (*GA* 736b 29-737a 8)

This passage is important in various respects: it tells us (1) that there is a close relation of *pneuma* to the soul by emphasising the divinity of *pneuma*, (2) that, as there is a scale of soul-faculties, there is also a scale of matter that corresponds to it, (3) that the *pneuma* in the semen contains the vital heat, and (4) that this heat is the generative heat of animals which is different from the heat of fire, but which is analogous to the heat of the sun which generates other beings in nature.[303]

Aristotle characterises *pneuma* as the substance that "is analogous to the element which belongs to the stars".[304] This heavenly element is *aither* that is characterised in the *DC* as being ungenerated, indestructible, and unalterable, moving in a circle, and having no weight (270a 13 ff.). The celestial spheres or the heavenly bodies that are made of this body are thus "eternal and not subject to increase or diminution, but unaging and unalterable and unmodified" (270b 1-2). In what aspects is this heavenly element analogous to *pneuma*? When Aristotle, in the *DC*, treats *aither* as a distinct element from other simple bodies (i.e.

[303] These points will be considered in turn below.

[304] It is to be noted that it is controversial what is contrasted with the simple bodies or what Aristotle thinks of as more divine, which is said to be analogous with *aither*. Peck, for instance, claims that the ""hot substance" is not of course Fire, but it is the *pneuma* which the semen contains" (Peck, 1942, p. 582, followed by Nussbaum (1978, p. 162) and Preus (1970, esp. pp. 35-36)). This view is straightforwardly denied by Balme who claims that "It is not *pneuma* but the generative heat that is comparable with *aither*". (1992, p. 163, followed by Freudenthal (1995, pp. 118-119)).

air, earth, fire, and water), it is not because they are different in degrees of purity, but because they are different elements.[305] That is, *aither* does not share any common characteristics with other simple bodies. However, Aristotle's definition of *pneuma* as 'hot air' suggests that *pneuma* has something in common with fire or air or both. Thus, if *pneuma* and the simple bodies appear to have 'something' in common, it is not itself *aither*. Nor is it any of the simple bodies since having some of their characteristics in common does not make it the same as them. The reason for Aristotle's analogy of *pneuma* with *aither* will become clearer as we further discuss its role in animal activities: it is that *pneuma* contains the generative heat (736a 1-2; 732a 19-20) and, also, that it is unalterable in a special sense (*MA* 703a 24-25) (see below).

(*b*) *The Connection between Soul and Pneuma*

With reference to the introduction of *pneuma* in the *MA*, both Peck and Nussbaum think that Aristotle posits it as 'a gap-filler' which is material stuff and without which animal locomotion cannot be fully accounted for. However, what kind of gap is to be filled in by adopting such a conception?

Peck, in an appendix (B) to his translation of the *GA* (1942), says that *pneuma* is "the 'organ' or 'instrument' of movement, that which bridges the gap between the immaterial ὄρεξις on the one hand and the material limbs of the body on the other".[306] He goes on to say,

> *Pneuma*, like *aither*, acts as an intermediary between immaterial mover and material objects. As we have seen, the unmoved mover moves the Heaven and the heavenly bodies which are made of *aither*, and the heavenly bodies in turn "move" sublunary bodies, viz. they bring about the transformation of the elements

[305] Freudenthal (1995), p. 116. Balme's interpretation of 'more divine' as a degree of purity (1992, p. 163 ff.) has been criticised by Freudenthal (1995, p. 109 ff.).
[306] Peck (1942), p. 579.

into one another, and also they bring about *γένεσις* and *φθορά*. So too the immaterial *ψυχή* moves *pneuma*, and *pneuma* in turn causes *ἀλλοίωσις*, thereby (i) moving the limbs of the body or (ii) causing the "movement" which is the development of the embryo.[307]

Basically, what Peck is saying is that *pneuma* is a tool or instrument of the soul that imparts motion to the other parts of the body. It is not immediately clear what he means by 'bridge'. In effect, the way he speaks leaves room for the interpretation that he is thinking of so-called 'instrumental dualism', i.e. the view 'that the soul is a non-material substance, identifiable separately from body, that imparts motion to body using some part of it as a tool'.[308] If so, then Aristotle is understood as having the Cartesian 'pineal gland' problem, which raises a difficulty of explaining how the non-material soul separated from the body can cause changes in the body which has nothing in common with the soul.[309] Some ten years later, Peck (1953) describes *pneuma* in a different way, saying that it is "the vehicle by which 'movements' originated by the soul, which has its seat in the heart, are transmitted and propagated outwards from the heart, or from the semen which contains the *pneuma* and the 'movements' with which the heart has charged it".[310] This remark might well be taken to mean that *pneuma* is a material substance in which the soul is actualised rather than an instrument that the soul uses to alter other parts of the body.

Nussbaum is also in favour of Peck's latter interpretation.[311] She argues that *pneuma* for Aristotle is used as an exemplification of *orexis* involving a physiological actualisation, by which he completes his hylomorphic account of soul and body. Aristotle does describe

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[307] Peck (1942), p. 589. cf. Peck (1953), pp. 118-119. Cf. Nuyen's instrumental view discussed by e.g. Nussbaum (1978, pp. 148-150) and Ackrill (1981, p. 72). According to Ackrill, Nuyens postulates three stages of the relationship between soul and body in the development of Aristotle's thought: dualism, instrumentalism, and hylomorphism. Among these, "Instrumentalism is a sort of transitional theory: it treats the soul as more like an independent thing than hylomorphism does, but it connects soul and body more closely than dualism does" (Ackrill, ibid.).

[308] Nussbaum (1978), p. 149.

[309] See Ch. II. Sec. 1 (*a*).

[310] Peck (1953), p. 119.

[311] Nussbaum, (1978), pp. 146-164.

pneuma as 'the immediate vehicle of the soul' at *Resp.* 474a 30-b 1 (cf. *DA* 433b 18). However, the role of *pneuma* might well be seen as an organ in which the soul is actualised (*DA* 415b 17-18), as the capacity for sense-perception is realised in sense-organs. Aristotle derives the conclusion that the semen that is composed of *pneuma* and water must involve the soul, from the homonymy principle that "there is no such thing as face or flesh without soul in it" (*GA* 734b 19 ff.), which he has claimed in many other places.[312] If this is a generalised view, it is conceivable that he would acknowledge that the soul is in *pneuma*, i.e. it actualises itself in it. We need not take Aristotle's 'tool' or 'instrument' language as meaning that the soul 'causes' changes in a distinct body.[313] We saw in Chapter II that the soul-body relationship of living beings is not between the soul and the body as separate entities, but between the soul of the living body and the body of the living being. That is, the soul is not an immaterial substance that causes bodily changes by means of *pneuma*, as in the case of a man cutting wood with an axe. Aristotle does regard the soul as a triggering force in the sense that the living being is not capable of its supposed function without it. However, Aristotle's description of 'the activities of the living being in virtue of the soul' might well be conceived as meaning that the doings of the soul are the doings of the living being. As we shall see,[314] his introduction of *pneuma* in the heart as a middle part from the ground that *orexis* is middle (*MA* 703 4 ff.) may well be taken to suggest that *pneuma* is not something that the soul uses to bring about changes in some other part of the living being, but a place in which the soul is actualised.

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[312] E.g. *Meteo.* 390a 10-17; *DA* 412b 12-24; 412b 27-413a 2; *Met.* 1035b 23-25; 1036b 31-33.
[313] Nussbaum (1978), p. 150.
[314] See Sec. 2 (*c*) and (*d*).

(*c*) *The Vital Heat*[315]

In effect, the primary relation of *pneuma* to soul in animal generation appears to be its use as a carrier or vehicle that transmits the soul from the sire to the offspring. However, Aristotle sometimes refers to the vital heat, rather than to *pneuma*, as a soul-carrier. It thus appears important to determine the role of vital heat apart from *pneuma*. However, this is not the right place fully to discuss its role in diverse activities of the animal.[316] I shall thus focus on its relation to *pneuma*.

Aristotle firmly maintains that "all living beings, animals and plants alike ... have a natural source of heat (*PA* 650a 1-6). Also, on many occasions in the *Juv.*, he claims that the life of the living being is closely related to the presence of vital heat in it. That is, living beings require a certain amount, or degree, of heat to be alive. This heat is certainly variable in degrees since the death of the living being is due to its temperature falling below that which it requires to stay alive.[317] And in living beings (including plants) it can be affected by 'their nutriment and the surrounding air supply' (esp. 470a 21-b 2). That is, nutriment increases their bodily temperature and there must be something that controls the temperature. Without such a controlling device, the consumption of nutriment will only increase the heat in the living being's body (470a 23-25). Thus Aristotle thinks that the excess of heat or of coldness in the living being is controlled by the opposite effects produced by the digestion of food, or the nutriment, and the surrounding air (see esp. 470a 5 ff.) or water in some other cases (478a 31-33). However, in the account of the relation between heat and air he does not make a clear distinction between atmospheric air around

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[315] Freudenthal offers an extensive analysis of the nature and role of the vital heat in his book entitled *Aristotle's Theory of Material Substance* in which he concludes that "for Aristotle vital heat is the physiological factor underlying all operations of soul—nutritive, perceptive, locomotion, imaginative, to a great extent even intellective" (1995, p. 74).

[316] See Freudenthal (1995), pp. 7-105.

[317] E.g. *Juv.* 469b 5 ff.; 470a 5 ff.; 474a 25 ff.; b 10 ff.; 478b 32 ff.

plants and inhaled air in breathing animals. At *PA* 668b 35 ff., Aristotle explicitly tells us that in breathing animals the cooling agent must be external, i.e. air or water, whereas in non-breathing animals (and, presumbly, in plants as well) the *sumphuton pneuma* is the cooling agent. However, it does not necessarily follow that the *pneuma* of breathing animals does not play such a role, i.e. a cooling effect, too. Aristotle might well mean that since breathing animals are hotter than non-breathing ones, they need some extra cooling effect from without (cf. *Resp.* 475b 19 ff.; *Meteo.* 379b 22-25).

Considering Aristotle's ascription of the capacity not only for nutrition, but also for generation to the same faculty of the soul, i.e. the nutritive faculty, it might be anticipated that he would ascribe to the heat a certain role in generation. In effect, the *GA* passage cited earlier (736b 29-737a 8) tells us that he identifies the vital heat with the generative heat. He there makes an analogy between the vital heat of the animal and the heat of the sun, both of which are differentiated from the heat of fire.[318] In his consideration of the generation or reproduction of locomotive animals (cf. 715a 25-27), Aristotle says that they possess two sexes both of which are responsible for generation in that the male provides the form and the female the matter (716a 5 ff.; 729a 9-10).[319] That is, the offspring is formed during the concoction[320] by the semen from the male and the menstrual fluid from the female. The menstrual fluid is formed into an embryo by the aid of heat (*Met.* 1040b 8-10). In *GA* I. 21, Aristotle makes it clear that the contribution of the female to the embryo is not

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[318] See Freudenthal (1995), p. 110.

[319] Note that Aristotle tells us that some locomotive animals are produced by their parents (sexual generation), whereas others are produced from decaying matter (spontaneous generation). As for the animals that undergo spontaneous generation, he says that "some of them are brought forth as larvae, both the bloodless ones that are not formed from living animals, and some blooded ones (examples are a kind of *cestreus* and other river fishes, also the eel tribe): all of these, although by nature they have but little blood, nevertheless are blooded animals and have a heart, which is the "principle" of the parts and blood-like in constitution" (762b 21-26).

[320] Concoction is defined as "a process in which the natural and proper heat of an object perfects the corresponding passive qualities, which are the proper matter of any given object" (*Meteo.* 379b 18-20). See also *Meteo.* IV. 2-3 for Aristotle's own definition and discussion of this matter. Cf. Peck (1942), pp. lxiii-lxx; Freudenthal (1995), pp. 22-23; Lloyd (1996), pp. 83-103.

the same as that of the male.[321] If it were, the female would be able to produce offspring on her own. Since it is not, "it needs some source or principle to supply the material with movement and determine its character" (730a 28-30). Thus it requires the male to play this role. The male contributes to the formation of the embryo by supplying to the female the semen that is composed of water and *pneuma* which contains the vital heat (736a 1-2), i.e. a motive force (732a 19-20).[322] On the other hand, in spontaneous generation Aristotle maintains that the material containing the internal heat has, at least, the capacity for nutrition, viz. the nutritive soul. He thus writes,

> Animals and plants are formed in the earth and in the water because in earth water is present, and in water *pneuma* is present, and in all *pneuma* soul-heat is present, so that in a way all things are full of Soul ... Now it gets enclosed as the liquids containing corporeal matter become heated, and there is formed as it were a frothy bubble. The object which thus takes shape may be more valuable in kind or less valuable; and the differences herein depend upon the envelope which encloses the soul-principle; and the causes which determine this are the situations where the process takes place and the physical substance which is enclosed. (*GA* 762a 19-22; cf. *GC* 318b 29; 321b 9; *Resp.* 471b 2 ff.)

Living beings that do not have different sexes reproduce their offspring by means of spontaneous generation. Thus some animals and plants that belong to this group must be able to actualise their soul in the 'enclosed envelope'. They would not be able to reproduce without having such a capacity within themselves.

Aristotle thus maintains two types of generative heat, i.e. the internal heat of sexual generation of some animals (the heat of the animal) and the external heat of spontaneous generation of plants and other animals (the heat of the sun). As shown, in both cases he associates life closely with the presence of the vital heat. That is, there cannot be any life

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[321] The reason for the difference between the two sexes that Aristotle offers at a later stage is that the natural heat in the male is superior to that in the female (765a 4 ff.; 775a 4 ff.).

[322] Peck (1942, lix) identifies the vital heat with *pneuma*. However, compare the two statements at 736b 35-37 in the passage quoted above (736b 29-737a 8).

without this heat, though the possession of the heat does not thereby guarantee the possessor's capacity for sexual generation. Aristotle would say that in the case of spontaneous generation a living being requires external heat to reproduce its offspring. However, the need for external heat does not mean the complete lack of internal heat: all animals must have internal heat in order to be alive.

There remain two questions to consider: whether all living beings, including plants, require *pneuma* in their reproduction and whether it is to be identified with the vital heat. If the answer to the latter question is positive, it then follows that the answer to the former must be positive as well. However, a negative answer to the latter does not necessitate a negative answer to the former since Aristotle might well posit *pneuma* as a vehicle or a container of the vital heat, as in the case of sexual generation where the *pneuma* in the semen transmits the soul to the next generation. As we saw, the semen is said to be composed of *pneuma* and water. However, it is plain that *pneuma* alone without containing the vital heat in it would not enable the female to reproduce its offspring since the vital heat in this case is the generative heat. In any case, there seems to be no doubt that *pneuma* is the vehicle or the container of the heat. If so, there is no reason to doubt that plants also have *pneuma*. Their possession of the heat is clear from the fact that Aristotle regards them as living beings and, also, acknowledges their capacity for reproduction.[323] In so far as they are alive and reproductive, they have the vital heat and, also, *pneuma* as the container that the heat resides in and as the vehicle that carries it to the next generation. However, Aristotle does not seem clearly to make up his mind about the relation between *pneuma* and

[323] "Ripening is a sort of concoction; for we call it ripening when there is a concoction of the nutriment in fruit. And since concoction is a sort of perfecting, the process of ripening is perfect when the seeds in fruit are able to reproduce the fruit in which they are found ... In the case of boils and phlegm, and the like, the process of ripening is the concoction of the moisture in them by their natural heat ..." (*Meteo.* 380a 11 ff.; cf. *PA* 650a 2-7) On the vital heat in plants, see Freudenthal (1995), pp. 70-73.

the vital heat and, as a result, it is difficult to determine which of them he considers as the vehicle of the soul and, also, whether he identifies them as one and the same thing.[324]

(*d*) *Pneuma in Sense-Perception*

In the account of the process of sense-perception in *GA* II. 6, Aristotle suggests that *pneuma* has a certain relation to the perception of the external object.

> The reason is that the sense-organ of the eyes is, just as the other sense-organs, set upon *poroi*: but the organ of touch and taste is simply the body or some part of the animal's body. Smell and hearing are *poroi* connecting with the outer air and full of connate *pneuma*, and ending in the veins [φλέβια] from the heart that extend around the brain. (743b 35-744a 5)[325]

In the *DA* II. 12, Aristotle tells us that perceiving the external object brings about a change in the body so that excessive perception of the object might destroy the sense organ (424a 24-32). As for the contact senses, the contact between the external object and the sense organs is an immediate contact without any medium (422a 16 ff.).

What about the distance senses? The *GA* passage cited above does not clearly show what kind of role *pneuma* plays in the animal's perceiving the external object. However, it seems to suggest that the information gathered by the sense-organs reaches the heart by means of *pneuma* which fills the *poroi* (passages).[326] Aristotle conceives that in the case of smell and hearing *pneuma* is connected with the external air. The external air is, of course, not the sensible quality itself that the animal perceives, but the medium through which it perceives the sensible quality. Thus hearing can also be explained in terms of the voice

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[324] Cf. Annas (1992), p. 18. Thus some commentators tend to say loosely that the *sumphuton pneuma* or the vital heat is that which transmits the soul to the embryo (e.g. Nussbaum, 1982, p. 159).

[325] Cited after Johansen (1998), p. 91.

[326] Johansen (1998), p. 91. For Aristotle's ambiguous usage of the term '*poroi*', see Beare (1906), p. 86 n. 1.

stirring up the external air that again brings about a change in our ears. It seems that the medium undoubtedly undergoes a certain change for "the actuality of the medium is to cause the actuality in the perceiver".[327]

Aristotle, in the *GA* passage above, says that the *poroi* end at the veins that are spread out to the heart and the brain.[328] On the other hand, at *GA* 781a 20 ff., he tells us that the *poroi* themselves are those which run from the sense-organs to the heart (or an analogous part). In any case, this statement implicitly suggests how the information perceived through the sense-organs can eventually bring about changes in the heart which result in animal locomotion. It appears that the change of the *pneuma* in the *poroi* is caused by the external object which is perceived through the medium and it again causes a change in the heart. The animal perceives an object as pleasant or painful (Ch. IV. Sec. 2 (*b*)). However, its perceiving an object also involves bodily changes: that is, when it has those feelings, the *pneuma* in the heart gets hot or cold and works on the fluid that resides in the heart. As a result, the fluid evaporates and either pulsation or respiration is produced (*Resp.* 479b 16-180a 15). Aristotle's account here sounds very much physiological or, rather, mechanical. In effect, as we shall presently see, he also explains the process from perception to the arousal of locomotion in that way. However, he notices that if animal locomotion is to be explained in such a way, then it has no difference from the purely mechanical motion of the puppet. Thus Aristotle ascribes to *pneuma* the title of 'unmoved mover' and tries to distinguish the two types of motion (see below).

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[327] Johansen (1998), p. 131.

[328] See Beare (1906), p. 335. He observes that in Aristotle the φλέβια translated here as 'veins' means, sometimes, 'nerves' and, sometimes, 'blood vessels' and that it is not always possible to determine which translation is correct.

V. 2 *Pneuma in Animal Locomotion*

The preceding discussion of *pneuma* in reproduction or generation and sense-perception clearly suggests that Aristotle thinks of it as a material substance that belongs only to the living being and that has a close relation to its soul-capacities. In sub-sections (*a*) and (*b*), I shall discuss Aristotle's characterisations of *pneuma* in the account of animal locomotion in the *MA*, which will once again show his thesis that *pneuma* is a necessary condition for the animal to be able to perform its living activities. And then I shall turn to argue that Aristotle maintains the position that those activities of the soul can be actualised *only* in *pneuma*. In supporting this view, I shall examine, in (*c*), his use of the conception as a criterion of distinguishing animals and their parts and, in (*d*), the implication of his introduction of the conception in relation to his treatment of *orexis* in *MA* ch. 10.

(*a*) *The Project of the MA*

At the outset of the *MA*, Aristotle states that the treatise is devoted to the consideration of 'the common reason [*aition*] for various types of motion, e.g. flying, swimming, stepping etc.' (698a 4-7). Then he promptly goes on to examine the physiological mechanism of the arousal of locomotion. In doing this, Aristotle frequently shows that he is relying on the hypothesis that what is true of a small world will also be true of the universe and *vice versa*, one of the basic hypotheses he believes in.[329] His discovery of the conception of *pneuma* seems to be based on two grounds (i) that, as there is an unmoved mover in the universe, there must also be some unmoved origin in the living being for it to move itself in place (cf. 700a 6-11) and that must be distinguished from the non-living being (a 12 ff.) and (ii) that, where there are psychological processes, there must be corresponding physiological

[329] E.g. *Ph.* 252b 25-29; cf. 252a 29-30; *MA* 698a 8-14; cf. 698b 8-15; 699a 22-27. See Ch. I. Sec. 1 (*a*).

processes (esp. 701b 33 ff.). We saw in Chapter I that Aristotle's observation of animals (that appear to move themselves without being moved by anything external) led him to the conclusion that they must include unmoved movers within themselves. However, this does not immediately entail (ii). (ii) is, rather, related to his conviction that the living being is composed of soul and body and the soul is not a separate entity from the body. That is, for a living being to be in motion, the soul must be embodied. However, this 'embodiment' of the soul in the body does not entail the conception of *pneuma*, either. That is, if the 'embodiment' merely means the actualisation of the soul in any body, not in some specific body, then there is no need for Aristotle to relate *orexis* to such a *specific* corporeal substance as *pneuma* to which he ascribes a *specific* role. On the other hand, (ii) alone does not entail the existence of *pneuma* since, if the soul were not to be characterised as the unmoved mover, Aristotle would not require a corporeal substance that plays such a specific role. Thus the conception of *pneuma* is reached on the basis of both (i) and (ii) because neither of them alone can lead to the postulation of this particular material substance which corresponds to *orexis*.

In *MA* ch. 6, Aristotle tells us that the rest of the treatise will concern the problems of 'how the soul moves the body' and 'what the origin of an animal's motion is' (700b 9-10). It is important to note that in saying this he appears to regard 'how the soul moves the body' and 'how the soul is moved' as two separate questions (cf. 700b 4-6). It is undeniable that, as mentioned earlier, the language Aristotle uses sounds like Cartesian dualistic interactionism which claims that the alteration of the soul brings about the alteration of the body, and vice versa. However, as argued in Chapter II, it is wrong to assume that Aristotle takes such a position. As for the passivity of the soul, his position is that the soul is related to the body as its host or vehicle. That is, the soul is in no way

directly moved by anything, but it might be moved accidentally in virtue of being embodied (e.g. *Ph.* 259b 17 ff.).[330] Moreover, such an embodiment must not be taken to mean that the soul is present in the body as an extra entity.

At this stage, we need further to recapitulate our earlier discussion in Chapter I. We there saw that the key answer Aristotle gives to the question, raised in *Ph.* VIII, in what sense the living being is the self-mover is that it has an unmoved moving part and a moved part. Having such parts is a sufficient *internal* condition for a self-mover to move itself without being moved by anything external. In the case of forced change, it is, in general, clear that the source of the change is external, whereas in self-motion the source must be inside the living being. However, Aristotle maintains that there cannot be any living body without involving the soul. This suggests that, in so far as the living being is concerned, it is not possible for the external mover to impart motion to a body in a way that dispenses with a soul. The moved part of the living being (or the self-mover) is by definition that which is *moved* and so it must go through a certain change, whereas the SF (i.e. the unmoved moving part) or the soul is not itself in motion and so it is non-material or non-bodily since for him whatever is in motion must have a magnitude.[331] Thus the soul as the source of motion must reside in the body. The ensouled body is itself a living being. Thus we can talk about the soul of a living being and, also, the body of a living being.

Although Aristotle sets out to discuss the problem of 'how the soul moves (κινεῖ) the body', he appears to think of the relation between the psychological and the physiological processes as simultaneous rather than causal which involves a time gap. That is, their relationship is 'one with, or in accordance with, the other' rather than 'one by the other'.[332]

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[330] See also Ch. I. Sec 2 (*b*).
[331] Esp. *DA* 403a 3-25; cf. 407a 3 ff.; *Ph.* 240b 8 ff.
[332] See Nussbaum's examination of the relevant *MA* passages (1978, pp. 151-153).

Thus Aristotle says that what moves and what is moved are indeed one, but different in *einai* (being).

> And the actuality of that which is capable of causing movement is no other than that of the movable. For it must be the fulfilment of both. For a thing is capable of causing movement because it *can* do this, and is a mover because it is *active*; but it is on the movable that it is capable of acting, so that the actuality of both alike is one, just as there is the same interval from one to two as from two to one, and as the ascent and the descent are one, but being them is not one; the case of the mover and the moved is similar. (*Met.* 1063a 28-34)

He is thus saying that, in the case of animal locomotion, it is the animal as a whole that moves, but its motion can be described in two ways; in psychological terms and in physiological terms. At *DA* 424a 24 ff. and 425b 26 ff., Aristotle also makes a similar point in the account of the relation between the capacity for sense-perception and the sense organs. The activity described in terms of the capacity for sense-perception can be also described in terms of the activity of the bodily sense organs. If so, Aristotle's discussion of the relation between the parts of the living being can be understood as his emphasis that the soul and the body move together as 'the union of elements' acts as a whole towards an end which can be achieved only by virtue of being united,[333] although the relationship between soul and body cannot be explained in the same way as the relationship between two corporeal elements because the soul is not corporeal. In what follows, I shall argue that Aristotle's project of the *MA* is to clarify this point in terms of *orexis* and *pneuma*.

(*b*) *Pneuma — The Material Unmoved Mover*

Aristotle's investigation of animal locomotion begins with the attempt to make sense of the observation that animals appear to start their motion without being moved by anything

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[333] Easterling (1966), p. 157.

external (*Ph.* 251b 29 ff.). However, despite the fact that he has dealt with the matter in terms of the inner parts in the *Ph.* VIII and the *DA*, he now seems, in the *MA*, to think that his previous discussion was not satisfactory. What more does he want to say about it? As mentioned, Aristotle's primary concern in the treatise is with the question of how the soul moves the body.

In chs. 1-5 of the *MA*, Aristotle often draws the conclusion that, as there is an unmoved mover in the universe, there must be an unmoved mover in the self-mover as well. One might think that this thesis has already been discussed in *Ph.* VIII and so there is nothing new to say about it. However, if we look more closely into his discussion in the *MA* chapters, Aristotle intends to discover a material unmoved mover, not an immaterial unmoved mover which has been dealt with elsewhere. For instance, in *MA* ch. 1 just after emphasising the necessity of an unmoved mover in the animal which is no doubt immaterial (698a 7-11), he tells us that animal joints are like unmoved movers which are not moved by anything else, but, nonetheless, move something else (698a 11 ff.; cf. 702a 21-b 11). In ch. 2, he tries to persuade us to accept that the resisting surface is a material unmoved mover (698b 8 ff.). And the rest of the chapters steer towards the same point about the necessity of a material unmoved mover. All these efforts turn out to lead to the discovery, in ch. 10, of *pneuma* as the unmoved mover necessary for animal locomotion. The questions we need to ask are then in what sense *pneuma* is a material unmoved mover and why Aristotle endeavours to find such a substance.

(i) *Pneuma as a Basis of Strength*

Aristotle's characterisation of a material substance as an unmoved mover does not sound as surprising as it first appears, once we read his characterisations of *pneuma* in *MA*

ch. 10. He tells us: (i) *pneuma* is where animals derive their strength from,[334] (ii) it is situated in the heart (or an analogous part in some animals) (703a 14-16), (iii) it imparts movement by being moved (703a 11-14; cf. a 4-7), (iv) it is capable of expanding, contracting, pulling, and pushing without constraint (703a 19-23), (v) it does not bring about changes in others by being itself altered (703a 24-25),[335] and (vi) it is heavier than the fiery and lighter than its opposite, i.e. the earthy (703a 23-24; cf. *GC* 311a 13 ff.). This is indeed all the information about *pneuma* we can gather from the *MA*. Among these features, we shall chiefly focus on (i) and (v) in relation to the discussion of *pneuma* as a material unmoved mover.

In *MA* ch. 1, Aristotle attends to the fact that, when in animal locomotion one part of the body moves, there must be some other part that remains still (698a 16-17), as in the case of the forearm moving when the elbow remains still (b 1 ff.). At 698a 16-21, he tells us that the joint enables the parts of the body to move in such a way. An important point about the joint is that it embraces two points, one being moved and the other at rest (a 21 ff.; 702 21-32). The joint is thus where the end-points, or extremities, of two parts meet. And, each joint is that in which one motion ends and another begins. Aristotle understands that the motion that begins is somehow initiated by the joint and regards the joint as an unmoved mover that moves another part, while also remaining at rest (e.g. 698b 8-15; 699a 27 etc.). After arguing for the necessity of the external unmoved mover, he also claims, in ch. 4, that there must be an unmoved mover inside the animal.

But in the case of animals, there must be something unmoved not only in this sense, but also, within the actual creatures moving from place to place—those, that is, which move themselves—(since they must have one part at rest and one in motion), there must be something against which the moved part supports itself

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[334] E.g. *MA* 703a 9-10; 703a 18-19; *Somn.* 456a 15-23.

[335] "δεῖ δὲ τὸ μέλλον κινεῖν μὴ ἀλλοιώσει τοιοῦτον εἶναι." For the implication of this passage, see below.

when it moves, as, for example, if it moves one of its limbs; for one part supports itself against another which is, so to speak, at rest. (700a 6-11; cf. a 17-20)

However, what exactly is the role of the unmoved mover other than that of being the source of motion? More explicitly in chs. 2-3, the role of the unmoved mover is described as offering resistance. Aristotle says,

For just as there must be something unmoved within the animal, if it is going to move, so even more there must be something outside the animal which is unmoved, supporting itself against which that which moves is moved. For if it gives way all the time, as when tortoises walk in mud or men on sand, the creature will not advance, and there will be neither stepping, if the ground should not remain still, nor flying nor swimming, if the air or the sea should not offer resistance. (698b 12-18)

He is here concerned with the unmoved mover (e.g. the surface, the air, or the sea) outside the animal that offers resistance. He says that the animal requires not only the *external* resisting force, but also the *internal* resisting force, and this is what differentiates it from the non-living being (698a 11-17). These characterisations of the *material* unmoved mover are relevant to those of *pneuma* illustrated above. Among them, *pneuma* as a basis of strength suggests that Aristotle's arguments for the unmoving principle in chs. 1-4 of the *MA* are meant to provide a framework for establishing the conception of *pneuma* in later chapters.

For Aristotle, affections are, in general, accompanied by heating and chilling in the heart, according to whether the affection is, respectively, pleasant or painful.[336] When the animal as a whole, not the soul or the body alone, senses something pleasant, the heart, more specifically, the *pneuma* in the heart (or in an analogous part) gets hot and, as a result, the heart expands. Under the opposite circumstances, the *pneuma* gets cold and the heart contracts. The expansion and the contraction of the region of the heart are thus due to the

[336] See 701b 13 ff.; b 33 ff.; 702b 21- 25; 703a 14 ff.

nature of *pneuma*, as a balloon expands and contracts in accordance with the change of the temperature of the air in it. As mentioned, Aristotle claims that all animals derive their strength from *pneuma*. However, what is it to say that *pneuma* is a source of strength? How does the animal get its strength from *pneuma*?

In his discussion of Atlas in *MA* ch. 3 (699a 27 ff.), Aristotle says that both what moves and what is moved must have some force. However, if their forces are equal, they will not be in any motion and remain at rest. Thus the moving part must have a greater force than that of the moved part in order for there to be a motion. At *MA* 698a 16 ff., Aristotle tells us that in the case of an animal the moving part and the moved part are connected by a joint. His reason for introducing a joint seems to be to say, as seen, that both parts connected by a joint might produce different types of motion. For instance, lifting the forearm straight up brings about the hand moving left or right by reason of involving a wrist joint (698a 18-21). The role of the joint in this sense is to offer resistance like the surface, the sea, the air, etc. Aristotle seems to think that the *pneuma* contained in the lung or the heart offers resistance to the animal in the same way as the joint does (*MA* 700a 19-25; cf. 698b 12-15). Some parts of the animal support themselves against the lung or the heart so that the animal as a whole can initiate its motion. Thus *pneuma* is like the joint, e.g. the wrist of the hand or the elbow of the arm which is unmoved. Aristotle elsewhere says that such an intense force for the animal to move itself is produced by holding its breath, i.e. *pneuma*.

> Since it is impossible to make any movement, or do any action, without strength, and the holding of the breath produces strength—breath from outside in the case of animals which inhale, and inherent breath in the case of those which do not (which is why winged insects of the class holoptera are observed to buzz when they move, through the friction of the breath pulsating against the diaphragm) ... (*Somn.* 456a 16-23. trans. Hett. See also *GA* 737b 29-738a 1)

All males hold their breath before emitting sperm (*GA* 718a 2-3), whether child-birth is easier or not depends on how well the female holds her breath in labour (775b 1-2), and so on.[337] If so, the *pneuma* in the lung or the heart can be said to be an unmoved mover in the sense of joints that lie between different parts of the body. It then appears that the purpose of the 'joint' account in the earlier chapters (chs. 1-4) of the *MA* is to establish the necessity of the centre as an unmoved mover in the physiological system of the living body.

However, even if this is one sense of *pneuma* as an unmoved mover in the animal, it does not seem to be a distinguishing criterion of the animal from the puppet. For it is certainly conceivable that the puppet has joints. That is, although the puppet is connected by cables and pegs instead of sinews and bones in the animal, it also seems to have joints in the sense of unmoved movers that offer resistance.[338] If so, there seems to be no fundamental difference between the animal and the puppet and between their motions. However, there is no doubt that Aristotle wants to distinguish them in terms of *pneuma* (701b 10 ff.). Thus we need further to examine the role of *pneuma* in animal locomotion.

(ii) *The One-Way Motion of Pneuma and Its Significance*

Aristotle elsewhere characterises *pneuma* as something that "κινεῖν μὴ ἀλλοιώσει" (*MA* 703a 24-25). The implication of this phrase is not immediately clear. Nussbaum translates it as 'imparting motion without undergoing alteration'.[339] But it might also mean 'imparting motion not by being altered'. The former implies that *pneuma* itself does not undergo any alteration, whereas the latter can mean that it does not impart motion by the alteration by which it is affected. If so, the latter does not necessarily mean that *pneuma* is

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[337] For more relevant passages, Clark (1975), pp. 203-204. The references are due to him.
[338] See below for more on this point.
[339] Nussbaum (1978), p. 52.

absolutely free from alteration. Before discussing the inalterability of *pneuma* itself, let us first examine the passage where this characterisation under discussion is made. I quote the relevant passage at length.

The movement of animals is like that of automatic puppets, which are set moving when a small motion occurs ... Now in the puppets and carts no alteration takes place, since if the inner wheels were to become smaller and again larger, the movement would still be circular. But in the animal the same part has the capacity to become both larger and smaller and to change its shape, as the parts expand because of heat and contract again because of cold, and alter. Alteration is caused by *phantasiai* and sense-perceptions and ideas.[340] For sense-perceptions are at once a kind of alteration and *phantasia* and thinking have the power of the actual things. For it turns out that the form conceived of the [warm or cold or] pleasant or fearful is like the actual thing itself. That is why we shudder and are frightened just thinking of something. All these are affections and alterations; and when bodily parts are altered some become larger, some smaller. ... Further, when, under the influence of heat or cold or some other similar affection, an alteration is produced in the region of the heart, even if it is only in an imperceptibly small part of it, it produces a considerable difference in the body, causing blushing and pallor, as well as shuddering, trembling, and their opposites. (701b 2-32)

In the *GA*, Aristotle also uses the 'puppet example' in a comparison with the formation of an embryo as a typical example of a chain of motions explained in mechanical terms as in the case of A moving B, B moving C, and so on (734a 3-18; 741b 6 ff.). On the other hand, in the above passage, he explains that the puppet composed of the pegs and the iron moves when it is released and slackened by means of a cable. He also thinks that the mechanical motion of the puppet is similar to animal locomotion that is produced by means of sinews, limbs, etc. (*MA* 701b 3-10). Also, the two creatures have something else in common in that a small change occurring in a central part results in great and numerous changes at a distance (cf. 701b 24-28 above). We might illustrate this point with an example of a man spinning a long string tied with a stone. In such a case, the string near the

[340] ἀλλοιοῦσκ δ' αἱ φαντασίαι καὶ αἱ αἰσθήσεις καὶ αἱ ἔννοιαι.

man's hand makes a small circle, but the string makes bigger circles with greater distance from the hand.

Nonetheless, there is, Aristotle says in the above passage, a major difference between animal locomotion and the motion of the puppet in that the puppet does not undergo any alteration (ἀλλοίωσις), whereas the animal does. However, it is to be noted that in the above passage he does not mean by ἀλλοίωσις the change of colour, temperature, etc., but becoming bigger or smaller, expanding, or contracting. He denies such alteration to the carts for the reason that their inner wheels do not become smaller and larger, whereas he ascribes alteration to the animal in that it has a part that can become both smaller and larger in turn. That is, such a part is what enables the animal to be capable of alteration.

However, why does Aristotle think that this is an important point? What does he want to tell us with it? The last paragraph in the passage cited above suggests that he is concerned with the question how a small quantitative change in a small part can produce 'a considerable difference' all over the body. Aristotle does not explicitly tell us which part he means by 'a small part', but it is presumably either some part in the heart or the heart itself. He says that an alteration occurs when heat or cold causes expansion or contraction in the region of the heart, and the expansion or the contraction again produces such alterations as blushing, pallor, shuddering, etc. Aristotle's emphasis on expansion and contraction in the region of the heart is based on the two grounds that the governing principle must reside in the most important part of the body (*MA* 702a 32-b 11) and that the heart is this important part since it is the first part to be formed in the embryo (*GA* 735 21-25) and since "a part which contains the first principle and the End of the animal's whole nature—which must be present in an animal ... must of necessity be formed first of all" (742a 37-b 1). Thus when the embryo is so formed, the heart (or an analogous part in some animals) is the first part to

be formed (and the last to fail when the animal dies) because it is the first principle of growth and movement to the other parts (739 b 32 ff.; 742a 16-b 37) and also because it is the source of sensations (743b 25-32) and contains the essential nature of the animal (*Juv.* 478b 32-34). Aristotle thus regards the heart as the central part of the animal and thinks that all the primary living activities start from there. Thus understood, Aristotle's placement of *pneuma* in the heart (or an analogous part) (*MA* 703a 15-16; cf. 703b 23-29) suggests that he wants to attribute to it a certain role which is initiated from the very beginning of life.

Aristotle further says in the *MA* that in arousing locomotion "there is no need of soul in each part" of the animal body (703a 36-37) since the components of the animal body (e.g. bones, sinews, marrows, flesh, etc.) are so well arranged as to move appropriate bodily parts for locomotion when 'some governing principle' initiates it (703a 30-b 2). By 'some governing principle', he means the soul that resides in the heart with the *sumphuton pneuma*. Although, as seen above, *pneuma* is spread all over the body, Aristotle appears to distinguish the *pneuma* in the heart from the *pneuma* elsewhere. Thus the *pneuma* in the heart has a close relation to the soul. The *pneuma* cannot be the governing principle without the soul. Without the soul, it will be like a dead body or a severed bodily part which Aristotle does not want to call a body or a bodily part at all. Aristotle thinks that such a well organised body resembles a city well-governed by the laws. The role of the *pneuma* in the region of heart is to control the organised sinews, limbs, etc., as a man controls a well-organised puppet with pegs and irons by a cable at the starting point.

Pneuma expands and contracts the region of the heart as the air in a balloon expands or contracts it when it is heated up or cooled down. However, it should be clear by now that *pneuma* certainly undergoes the alteration of getting hot or cold and, as a result,

respectively, expands or contracts the heart which initiates the movement of the sinews and the limbs of the animal. Again, *pneuma* is by definition 'hot air' and it is undeniable that Aristotle acknowledges that it might gain or lose some of its heat. However, it is not the case that it transmits its own temperature to other parts of the body, but transforms it into the expansion and the contractions of the bodily parts. At *GC* I. 7, 324a 30-b 13 (cf. *Ph.* 258a 18-22), Aristotle says that "between the unmoved mover and moved the contact is one-way".[341]

Now, in motion, there is nothing to prevent the first mover being unmoved (indeed, as regards some this is actually necessary) although the last mover always imparts motion by being itself moved; and, in action, there is nothing to prevent the first agent being unaffected, while the last agent only acts by suffering action itself. For if things have not the same matter, the agent acts without being affected; thus the art of healing produces health without itself being acted upon in any way by that which is being healed. But the food, in acting, is itself in some way acted upon: for, in acting, it is simultaneously heated or cooled or otherwise affected. Now the art of healing corresponds to an origin, while the food corresponds to the last (i.e. contiguous) mover. .....

Pneuma has a peculiar characteristic in that it is the agent that undergoes some alteration by means of some other agent, but does not transfer the same alteration it receives to another patient. That is, it becomes hot or cold by means of some other agent and thus undergoes motion in quality, but the motion it transmits to the region of the heart is motion in quantity, i.e. expansion and contraction of the area. Once again, *pneuma* is altered by something else, but this is not the same sort of alteration the *pneuma* imparts to the heart. And in this sense, *pneuma* is said to be an unmoved mover, although it does undergo a certain alteration, i.e. becoming hot or cool.

In the previous section, we saw that, when the treatment of *pneuma* as an unmoved mover in the sense of a joint is understood as such, there is a doubt about its validity as a

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[341] Gill (1991), p. 255.

distinguishing criterion between animal motion and the motion of the puppet. However, as we have seen in the present section, the significance of *pneuma* in the animal is its nature to transmit a different sort of alteration to its patient from the motion it undergoes.[342]

(*c*) *Pneuma as a Differentiating Factor*

Based on the examination of the physiological constituents (in particular, flesh and blood) of the animal, Lloyd tries to show that "in the case of living creatures, there is no altenative to the matter they happen to possess.[343] In this way, he denies the functionalist ascription of compositional plasticity to Aristotle's hylomorphic distinction between soul and body. He rightly points out that in order to understand the activities of the living being, we have to analyse not only the nature of its constituents such as flesh and bones, but also the nature of the elements (i.e. the simple bodies) that constitute them.[344] Indeed, Aristotle deals with the primary constituents of bodily parts at *GC* II. 7, 334a 22 ff. in terms of the primary pairs of opposites, i.e. 'hot and cold' and 'wet and dry'. However, as he claims in the subsequent chapter, not only living beings but, in fact, all the beings in the sublunary world are composed of the four simple bodies (334a 31-335a 22).

There is no doubt that Aristotle believes that each of the simple bodies has its own characteristics, i.e. fire (hot and dry), air (hot and moist), water (cold and moist), and earth (cold and dry) (330b 4-5). If the functionalist interpretation of Aristotle is right, then Aristotle must have thought that there can be some sorts of matter other than fire that has the characteristics of 'hot and dry'. That is, Aristotle should have thought of more than the four elements and called something fire for the reason that 'that something' has the

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[342] See also Sec. (*d*) (ii) below.
[343] Lloyd (1992), p. 39.
[344] Lloyd (1992), pp. 45-46.

characteristics of fire. However, this line of argument does not appear convincing since for Aristotle the number of the fundamental constituents that are common to all sublunary beings is exactly four.

As we saw earlier, in accounting for the activities of the living being Aristotle introduces the conception of *pneuma* that is peculiar only to the living being (cf. *GA* 736 29-737a 8). Unfortunately, although Lloyd does notice the conception,[345] he neglects its significant role in relation to the flesh and blood he discusses in his article and to the physiological constituents of the living being as a whole. For that reason, his argument is not strong enough against the functionalist position. For, as we shall see, Aristotle admits that not all animals have the blood, but some might have some analogous liquid. The functionalist notes this point and goes on to argue that they are compositionally plastic.[346] Thus, unless Lloyd shows what both types of liquid are primarily composed of, his argument is still vulnerable to the functionalist attack. However, the following discussion will show that the primary component of both the blood and the analogous liquid has a close relation to the amount of *pneuma*. This will also suggest that Aristotle does not think that there can be another element Q that can have the same characteristics as P. For him, if something had the characteristics of P, it would be P, not Q or whatever.[347]

As noted, in the *DA* Aristotle has distinguished different classes of living beings according to their functions or activities in virtue of the different faculties of the soul they

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[345] Lloyd (1992), p. 46.

[346] See Nussbaum (1978), p. 82 ff.; Nussbaum and Putnam (1992), n. 17.

[347] Cohen (1992, p. 69) argues that the attempt to characterise the essential connection between soul and body in the living being in terms of the four simple bodies is a way 'gone too far' since 'the elements are too remote to be the matter of a living hylomorphic compound; they are not even *potentially* alive'. However, we have seen that Aristotle has no doubt that the composition of the living being of the four simple bodies plus *pneuma* is a primary mark that distinguishes it from the artefact, e.g. the puppet, that is composed of the four bodies only (*MA* 701b 2 ff.). Moreover, Aristotle thinks that the amount of *pneuma* is related to different bodily organs, different species of animals and, also, to their lives and deaths (see below). Thus without the examination, in particular, of *pneuma*, it is not possible to show what the living being is, why it is alive, why some animals have different bodily organs, and the like.

have (see Chs. III and IV). Non-living beings are differentiated from living beings in the *Ph.* for the reason that the latter have souls (255a 6 ff.). Among living beings, animals are different from plants in virtue of their sensitive faculty of the soul, whereas locomotive animals are different from non-locomotive animals in virtue of their locomotive faculty. Thus if he wants to say that the soul-faculties are essentially embodied, then it is to be expected that he will also try to establish the different sorts of matter they are realised in.[348] In effect, this is exactly what Aristotle is doing by characterising *pneuma* and blood as differentiating factors in different classes of animals,[349] in different sexes,[350] and in different parts of the animal.[351] Different bodily parts and different animals are generated in accordance with the purity, the temperature, or (and) the amount of *pneuma* and blood (or the analogous stuff) (cf. esp. 732b 26 ff.; *HA* 521a 4 ff.). His account of different animals in terms of blood in *PA* II. 2 is one such example.

> Further, variations are found among different specimens of these uniform parts, and this is to subserve a good purpose. Blood is an excellent illustration. Blood can be thin or thick, clear or muddy, cold or warm; and it can be different in different parts of the same animal: instances are known of animals in which the blood in the upper parts differs from that in the lower parts in respect of the characteristics just enumerated. And of course the blood of one animal differs from that of another. (647b 29-36)

This passage tells us how Aristotle explains the reason for different species of animals being different and, also, for different capabilities of the same species of animals. The differentiating factor introduced here is blood which includes 'heat in its definition' (*PA* 649b 25-26). For Aristotle "the blood is the material of which the whole body is made"

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[348] Cf. Lloyd (1992), pp. 44-45.
[349] *GA* 732b 15 ff.; cf. *Resp.* 475b 6 ff.; *HA* 521a 4-6.
[350] *GA* 765b 7 ff.; cf. *HA* 521a 23-32; *PA* 648a 28 ff. Cf. Rist (1989), p. 131 & pp. 246-249.
[351] *GA* 741b 37 ff.; *PA* 647b 31-648a 28. As may well be clear by now, the degrees or levels of *pneuma* Aristotle is here concerned with are different from those levels Balme has in mind (Sec. 1 (*a*) above). Aristotle's are of connate *pneuma*, whereas Balme's are of inhaled air.

(651a 14) and thus its condition is a criterion of the distinction between individuals and species. In this way, he ascribes to blood "a whole range of other functions of the soul", as Lloyd points out.[352]

Aristotle explains different parts of the animal in terms of the temperature of blood in *PA* II. 2 and different classes of the animal in terms of their different amounts of blood in *GA* II. 1. However, he closely relates its temperature to its amount and so different animals are so divided on both counts (see *GA* 732b 32 ff.). It thus seems that the differentiating factor of animals and their parts is blood rather than *pneuma*. However, they are indeed correlate concepts. In effect, the thinness or thickness of the blood (or blood-like liquid) has a lot to do with the amount of *pneuma* in it (735b 8-37). Aristotle maintains that the hotter blood is thinner and clearer and so "the more perfect are those which are hotter in their nature and have more moisture".[353] As noted, the concoction is the action of the heat on moisture which, as a result, evaporates. The blood (in sanguineous animals) or the analogous stuff (in bloodless animals) is the liquid that evaporates by the heat that acts on it (*PA* 648a 20-22). That is, the liquid is concocted by the heat and turned into *pneuma*.

Furthermore, the *pneumatised* blood not only supplies the nutrition necessary for maintaining the life and the growth of the animal, but also contributes to the formation of its various bodily parts.[354] We need to recall our earlier discussion of the *pneuma* that performs a cooling effect. It seems that the more *pneuma* an animal has, the cooler its body is and, also, the thicker its blood becomes. Presumably, if an animal does not have enough heat necessary for its living, it will not live long. However, a small amount of *pneuma* in an animal does not necessarily mean that the animal will live long and its blood will be hot.

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[352] Lloyd (1992), p. 44.
[353] *GA* 732b 31-32; cf. *HA* 521a 4-6; a 23-32.
[354] Peck (1953), p. 115.

What is important is that the necessary amount of *pneuma* is related to the necessary heat or temperature that the being in question requires in order to stay alive. If there is too much or too little heat, it will not survive (*Resp.* 474b 10 ff.). Thus when Aristotle says above that the more perfect being is hotter than others, he means that the degree of the heat it naturally requires is higher than that of others. For instance, intelligent beings require more *pneuma* than others in controlling their temperature (cf. *PA* 647b 29 ff.). Thus the appropriate amount of *pneuma* is related also to the lives and deaths of living beings.

Although Aristotle often talks about an analogous part to the heart or analogous stuff to the blood and so on, he never conceives any analogous substance to *pneuma*. That is, when the blood is concocted, it is 'charged with *pneuma*' or, as is sometimes described, '*pneumatised*'; i.e. the *pneuma* resides in the blood.[355] Thus the amount of *pneuma* and that of blood are correlative. According to our discussion so far, it appears that the correlation between the amount of *pneuma* and that of blood is a key factor in determining what kinds of animals they are and what kinds of capacities they are supposed to have. However, we have to say that the common factor of differentiating living beings is *pneuma* rather than the blood since only some of the animals have blood, whereas *pneuma* is common to all the living beings. As seen, there is no doubt that Aristotle thinks of *pneuma* as a fundamental component of bodily parts. The point is that he does not think of any material substance other than *pneuma* as playing the same role as it does. If he thought that *pneuma* can be replaced with another substance that plays the same role it does, he should have mentioned even once that there is an analogous substance to it, as he often talks of analogous bodily parts to other bodily organs. However, he never speaks in that way. Thus we may now conclude that Aristotle does not accept compositional plasticity at the

[355] For the argument for this point, see Freudenthal (1995), pp. 121-124.

fundamental level. The question we are concerned with here is not whether it is really possible that a psychological capacity that is realised in P can be realised in Q for the reason that Q is in the same functional state as P, but whether Aristotle would acknowledge such a possibility. Our examination of *pneuma* in this section shows that Aristotle would deny the possibility that *pneuma* can be replaced with any other sort of matter.[356]

We might call the psychological activities 'functions'. However, they are not 'the functional states of *matter*' which allows for compositional plasticity.[357] For Aristotle *pneuma* is not the air in the environment, though he sometimes calls it with the same name, but the connate *pneuma* that belongs to an animal in a living (ensouled) being. Likewise, the functions of the soul are not to be performed apart from the appropriate matter which undergoes such and such processes. Aristotle thinks not only that psychological processes must accompany corresponding physiological processes, but also that the matter that undergoes the processes must be specific matter, i.e. *pneuma*, that exhibits its peculiar characteristics. The latter point signifies that if we replace the *pneuma* in the heart with any of the simple bodies or any other compound of them, none of them will act as the *pneuma* and so the animal will not be able to be alive, not to speak of functioning in an appropriate way. Thus, when Aristotle says that "the soul is in a body, not any body, but 'a body of such a sort' (*DA* 414a 19-20)" or that "the soul can be realised in what is already in the potentiality of that thing, i.e. in the appropriate matter ... (a 25-28)",[358] he means that there

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[356] See below for more on this point.

[357] Nussbaum (1978), p. 146.

[358] The relevant Greek text reads "σῶμα μὲν γὰρ οὐκ ἔστι, σώματος δέ τι, καὶ διὰ τοῦτο ἐν σώματι ὑπάρχει, καὶ ἐν σώματι τοιούτῳ, καὶ οὐχ ὥσπερ οἱ πρότερον εἰς σῶμα ἐνήρμοζον αὐτήν, οὐθὲν προσδιορίζοντες ἐν τίνι καὶ ποίῳ, καίπερ οὐδὲ φαινομένου τοῦ τυχόντος δέχεσθαι τὸ τυχον. ... ὅτι μὲν οὖν ἐντελέχειά τίς ἐστι καὶ λόγος τοῦ δύναμιν ἔχοντος εἶναι τοιούτου, φανερὸν ἐκ τούτων." (*DA* 414a 21-28)

must be a particular bodily substance without which the soul-capacities cannot be actualised. Thus the functionalist ascription of compositional plasticity to Aristotle fails.[359]

(*d*) *Pneuma and Orexis*

Aristotle's explicit account of the role of *pneuma* in animal locomotion can be found only in *MA* ch. 10. He opens the chapter by saying,

> According to the account that gives the reason for motion, desire is the middle, which imparts movement being moved. But in living bodies there must be some body of this kind (*MA* 703a 4-6)

The passage suggests two points: (1) Aristotle regards *orexis* and *pneuma* as moved-movers and (2) his arrival at the conception of *pneuma* is based on the discovery of *orexis*, but not the other way around. Let us examine the implication of these points in turn.

(i) *Pneuma and Orexis as Moved-Movers*

We have taken it for granted from our earlier discussion of the SF in Chapter I that, since *orexis* is a soul-capacity, it is not subject to motion on its own without being embodied or enmattered. We also saw Aristotle's attempt to establish *pneuma* as an unmoved mover. Thus one might be alarmed by Aristotle's claim in the above passage that both *orexis* and *pneuma* are moved-movers, i.e. those that κινοῦσι κινούμενα. How can the two conflicting characterisations be reconciled? Is it reasonable to say that they are unmoved movers as well as moved-movers? In dealing with these questions, let us first ask what *orexis* is said to be moved by. One might think that *orexis* is in the middle (μέσον) in relation to locomotion because it comes between the activity or actualisation of sense-

[359] E.g. Nussbaum (1978), p. 148.

perception (or seeing an object), for instance, and the arousal of locomotion. However, even if this is true, it does not necessarily follow that *pneuma* should also come in the middle. For Aristotle, in the *MA*, maintains that not only *orexis*, but also sense-perception, *phantasia*, and thought (which are necessary for the arousal of *orexis*), are actualised in *pneuma*. Thus the order of the actualisation of psychological capacities in arousing locomotion does not thereby make *pneuma* a moved-mover.

What is of importance at this stage is to note that whatever is said to move *orexis*, it is not any internal bodily parts or other psychological processes, but the external object (see e.g. 700b 23-25; 703a 7-8). However, the relation between the external object and *orexis* is, of course, not a causal one as in the case of a man pushing a chair. There are two primary reasons for this claim: Aristotle thinks, first, that there is no time gap between perceiving an object and the actual initiation of locomotion (*MA* 702a 15-17; a 20-21; cf. b 26 ff.) and, second, that the soul cannot cause change in anything that has a magnitude without being embodied (703a 1-3). For, although Aristotle often introduces the object of *orexis* as the origin of animal locomotion, it is clear that it does not move the animal or cause it to move as a man pushes or drags a chair by force.[360] Thus we have to think of *orexis* as an embodied capacity. But embodied in what? As seen, Aristotle clearly indicates that it is embodied in *pneuma*. In other words, as he envisages sense-organs as the actualising bodily parts of the capacity for sense-perception, he also regards *pneuma* as the bodily element in which *orexis* is actualised. Thus Aristotle's suggestion seems to be that the activities of *orexis* and the activities of *pneuma* being moved-movers can be established in so far as we treat them as the activities of one and the same thing. That is, *orexis* is not moved in its own right, but by being embodied in *pneuma*. However, it is, of course, odd to

[360] E.g. *DA* 433b 5 ff.; *MA* 700b 23 ff.; 701b 33 ff.

say that *pneuma* desires something. Strictly speaking, it is the animal that desires something in virtue of the appetitive faculty of the soul embodied in *pneuma*. Given this caution, we shall now freely talk of the object of *orexis* or *pneuma*.

According to the passage at *MA* 702a 17-19,[361] the arousal of locomotion involves the following processes: (i) perceiving an object as pleasant or painful (heating and chilling),[362] (ii) the desire to pursue or avoid (expansion or contraction), (iii) the preparation for pursuit or avoidance (the arrangement of the bodily parts), and (iv) the actual arousal of locomotion. As noted, the process from (i) to (iii) involves *pneuma* which resides not only in the heart (703a 14-16), but also throughout the whole body (a 18-19). *Pneuma* is so well disposed as to organise the whole living body and so its bodily parts are in appropriate places to actualise the capacities of animals (703a 28 ff.). Thus when the *pneuma* in the heart gets hot or cool, it expands or contracts the heart so as to put the whole body in actual motion. Aristotle's characterisation of *orexis* embodied in *pneuma* as a moved mover in the account of locomotion appears to presuppose the external object as the input and locomotion as the output, as the functionalist would describe (see Ch. II. 1 (*c*)). However, he thinks that the process from (i) to (iii) is simultaneous and they are all actualised in the physiological substance, *pneuma*. Indeed, Aristotle's treatment of *orexis* as a moved mover in relation to the external object suggests that he thinks of it not as a single capacity that is separated from other psychological capacities, but as a faculty that comprehends them.[363] Thus for Aristotle the psychological activities involved in the arousal of locomotion do not have a causal relationship in our sense of 'causal'. That is, he also

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[361] Cited in Ch. IV. 1 (*a*). See also e.g. *MA* 701b 16 ff.; b 33 ff.

[362] Whether animals perceive an object as an object of a certain sort in a somewhat loose sense, or specifically as an object of pleasure or pain has been discussed in Ch. IV. esp. Sec. 1 (*b*) & (*c*).

[363] See Ch. III. Sec. 1 (*a*).

differs from the functionalist in that he does not acknowledge causal relations between the psychological activities.[364]

It is undeniable that an animal requires a triggering or igniting force for its locomotion. Considering that the process from (i) to (iii) via (ii) leads to locomotion, it now appears that the animal requires something to heat or cool the *pneuma*. We need to note two points here: (*a*) the feeling of pleasure or pain results from the presentation of an object through sense-perception, *phantasia*, or thought[365] and (*b*) the psychological activity of pleasure or pain is identified with the physiological activity of heating or chilling. If so, the object in (*a*) seems to be a triggering force, i.e. the source of motion. It is, however, still obscure how the object is said to move the perceiver or in what sense it is a source or cause of motion. Furley thinks that an individual's *orexis* rather than the object as such is a cause.[366] It is certainly true that the object does not push or drag the perceiver in action. It can become the object of *orexis* when and only when the animal desires it. However, we need to clarify this statement, according to our earlier discussion (Ch. III. Sec. 3 (*a*)). Firstly, only when an object is perceived or recognised by the animal as what is pleasant or painful, does it become the object of pursuit or avoidance (διωκτὸν καὶ φευκτόν). Moreover, even if there are intentional objects of *orexis*, the individual will have *orexis* only when it feels hungry. Thus it is not the object as such, but the object interpreted as pleasant or painful by a desiring animal, that is the source of motion.

However, we need to pause to ask again whether this is Aristotle's understanding of the object as the source of motion. We know that the soul is not an efficient cause in the modern sense in that for Aristotle causation is not necessarily between two events[367] and,

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[364] See Ch. II. Sec. 1 (*c*).
[365] See esp. Ch. IV. Sec 2 (*c*).
[366] Furley (1996), p. 64; see also, Smith and Jones (1986), esp. pp. 238-239.
[367] Lear (1988), pp. 30-31.

also, causes are not necessarily prior to effects.[368] However, it is undeniable that Aristotle regards the soul as an efficient cause in that it brings about some effects in the living body. The question is then what brings about effects in it. This question arises since saying that the individual's *orexis* is the source of motion is no more than saying that its soul is the source. If so, it seems that Aristotle does not have to mention any external object as a source at all since *orexis* as such is the *orexis* for something. However, this is certainly wrong. At *DA* III. 10, 433b 5 ff., Aristotle describes the object as an unmoved mover. It is an unmoved mover because it brings about motion in the animal by being desired. In other words, it does not bring about motion in the animal by force or *qua* itself, but by being 'apprehended in thought or *phantasia*'.[369] It thus appears that animal soul is the efficient cause in the sense that the animal would not be able to arouse its locomotion without it. Moreover, the animal is capable of desiring an object for the sake of some specific end in virtue of its soul.

It seems that Aristotle's concern with the object of *orexis* is derived from a conviction that "if there were no external objects in the first instance, then the animal would not be able to satisfy its *orexis* for survival". Thus considering that the ultimate aim of the living being is to live, the existence of the external object seems to be as important as its *orexis*. It is now clear that unless the object of desire is perceived by the perceiver as pleasant or painful, it cannot be a final *aition* of the perceiver.[370] At first glance, the influence of the object seems to be its presence in *phantasia* or thought, i.e. merely an imagined or

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[368] Allan (1965), p. 1.

[369] *DA* 433b 11-13; cf. *Met.* 1072a 26-27; *MA* 700b 35-701a 1.

[370] Aristotle's description of the external object, rather than *orexis*, as the first mover implies that he has in mind animal locomotion that proceeds towards a specific end rather than an indeterminate end. That is, he is thinking about the procedure (i) "I am hungry. I want a sandwich." rather than (ii) "I am hungry. I want some food (any kind of food)." (i) leads to a determinate action and (ii) to an indeterminate one. Although we might think that (i) would not be possible in the case of irrational locomotive animals other than human beings, Aristotle does not appear to agree with us. His statement at *MA* 701a 16-25 suggests that he is indifferent to such a distinction.

articulated object. However, Aristotle's emphasis that an object must be that which is *realisable*[371] suggests that the object in question must generally exist in reality.

The necessity of the external object is thus in harmony with the survival of the individual. In other words, the object can be the final *aition* in so far as it satisfies the end of the individual. Aristotle at times says that the soul is the final *aition* of the living being (e.g. 415b 15-22). Now it appears to mean that the animal has the capacity for maintaining its own life. However, this capacity must be differentiated from its capacity for *orexis*. Of course, the animal has the capacity for desiring something for its survival. Our earlier claims in III. 2 (*c*) that the lower ends are for the ultimate end and in IV. 1 (*a*) that the higher faculty of the soul comprehends the lower ones have shown that all the faculties of the soul are for the survival of the individual: it is not one or more than one faculty that is necessary for the survival of an individual. It might be disappointing to find out that Aristotle's conception of soul does not tell us much about how the animal has such a capacity: it only tell us that it is so and so. Nonetheless, we have learned from Aristotle's discussion that the mere presence of the external object on its own does not affect the animal, unless the animal has such a capacity to present it to itself as desirable. In this sense, to say that the soul is the formal *aition* is to say that the animal has such a capacity to move around for food which is necessary for its end, i.e. its survival.[372]

The animal's possession of the capacity for *orexis* is traced back by Aristotle from his observation of its locomotion. He takes a considerable leap of deductive reasoning from the conviction that what is true in a small world must be true in the universe.[373] However, in inferring an animal's capacity for *orexis* Aristotle would not require such a leap. What he

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[371] *MA* 700b 24-25; cf. 701a 23-25; *DA* 433b 15.
[372] Cf. Ch. II. 3 on Aristotle's attempt to establish the hierarchy in different senses of *aitia* (*PA* 639b 11-16).
[373] *Ph.* 252b 25-29; cf. 252a 29-30; *MA* 698a 8-14; b 8-15; 699a 22-27.

needs is to witness different reactions of the animal to the same conditions or the same reactions to different conditions. Some animals sometimes move for the food over there, whereas they sometimes do not, though seeing the food. The observation of those animals' different reactions to the same conditions is enough for one to conclude that the food is not the very force that triggers animal locomotion; that is, animals must also have some inner conditions such a state as feeling hungry and the *orexis* to pursue or avoid the food.

Nonetheless, we cannot think of the actual satisfaction of the animal's state of hunger without reference to the existence of food in the environment. An easy way of interpreting *orexis* as an unmoved mover might be suggested in relation to Aristotle's statement that "if we exclude the motion of the universe, living creatures are responsible for the motion of everything else ..." (701b 11 ff.). In this way, he might be saying that "if we exclude the affection of the environment," then *orexis* embodied in *pneuma* can be said to be an unmoved mover. *Orexis* is *orexis* for something and it can be actualised or satisfied only in relation to the external object. In other words, the object does not exist in the environment because the animal has *orexis* for it. In this sense, *orexis* embodied in *pneuma*[374] cannot be the unmoved mover when it is considered in relation to the objecs of *orexis* in the environment. Thus he can legitimately claim that the animal is a moved-mover in relation to the environment, but it is, nonetheless, a self-mover since it has the proximate reason for locomotion, which is *orexis* (cf. 701a 33-35). On the other hand, Aristotle's attempt to characterise *orexis* and *pneuma* as moved movers and to derive the existence of *pneuma* from the animal's capacity for *orexis* may well be mirrored as implying that he is thinking of an essential connection between the two.

[374] I think that Aristotle has the embodied *orexis* in mind when he talks about its movability. For he firmly maintains that all the soul-faculties as such are exempt from any kind of motion.

(ii) *Aristotle's Top-Down Explanation*

Let us now turn to the implication of the second point of the *MA* passage at 703a 4-6 cited earlier. In that passage, Aristotle undoubtedly shows his conviction that since in locomotion there is a psychological process that involves *orexis*, there must (δεῖ) be a *corresponding* material substance which soon turns out to be the *sumphuton pneuma* (703a 4-6). However, does he also hold that the presence of *pneuma* is sufficient for explaining the capacity for *orexis*?

Considering the point that *pneuma* belongs to all living beings, it might not be immediately clear why in the account of animal locomotion Aristotle needs the conception. However, *MA* 701b 2 ff. suggests that he initially postulates it as a criterion for distinguishing animal locomotion from the motion of the puppet (701b 2 ff.). In the first instance, the criterion seems to be based on their material or physiological differences. However, Aristotle's intention in emphasising the physiological difference is eventually to bring out the psychological capacities that only the living being has (cf. 703a 4 ff.). In stating the reason for the physiological differences of alteration, he says that it is relevant to the capacities for '*phantasia*, sense-perceptions and ideas' (701b 16-17). That is, he is saying that since alteration is due to psychological capacities, what is capable of it has such a physiological characteristic. In this way, he suggests that it is not the case that every automaton-like organism can have psychological capacities. Thus, if something does not have such a physiological characteristic, it does not have psychological capacities, either. Indeed, this line of interpretation is on a par with Aristotle's idea developed in the *DA* that it is not reasonable to say that the soul pities, fears, desires, etc., but the living being as a whole does so with the soul (e.g. 408b 1-17).

As shown above, *pneuma* is involved in various animal activities such as the digestion of food (*pneuma* in the stomach), the transportation of the perceived data (*pneuma* in the *poroi*), the transmission of the soul to the offspring (*pneuma* in the semen), the arrangement of the bodily parts for locomotion (*pneuma* in the heart), and so forth. Also, its amount is a significant factor in distinguishing sexes, parts of the animal, species of animals, and so on. Furthermore, since there is no doubt that Aristotle closely relates it to *orexis*, if there is anything that accounts for the animal's capacity for *orexis* in physiological terms, then it is the material substance '*pneuma*'. It thus appears reasonable to think that, as Nussbaum and Rist point out,[375] he wants to relate the goal-directedness of locomotion to *pneuma*. However, considering that not only locomotive animals, but all living beings, have the connate *pneuma*, we must not assume that its goal-directedness is related to its role in locomotion only. There are, as I have said earlier, other forms of pursuit than the goal-directed locomotion. But how can Aristotle explain why some animals are capable of locomotion for an end and others are not, despite the fact that all of them have *pneuma*? As he accounts for different species of animals in terms of different faculties of the soul, he can presumably explain the different species in physiological terms, i.e. in terms of the temperature and amount of *pneuma*. For instance, the indeterminate locomotion of some animals can be explained in terms of their insufficient amount of *pneuma* for the capacity for locomotion in their blood, whereas locomotive animals can be explained in terms of the sufficient amount of *pneuma* for it. If so, it appears that the goal-directedness of animal locomotion can be also explained in terms of *pneuma*.

However, the initial question we raised earlier is whether Aristotle thinks that such and such an animal is capable of locomotion because it has a certain amount of *pneuma*, i.e. the

[375] Nussbaum (1978), p. 146 & p. 160 ff.; Rist (1989), p. 131 ff.

amount necessary for it to have such a capacity. As noted, the problem with the materialist account of the living being is, if it is described simply in terms of purely material components, how we can explain such a distinct activity that involves intention. Despite this problem, the denial of any independent non-corporeal substance as a component of the living being inevitably drives us to account for its activities in terms of material components. One might think that the attempt to account for living activities in that way seems to contain some form of hylozoism, viz. 'the view that matter is endowed with a kind of life'.[376] Indeed, the Stoics' conception of *pneuma* might well be understood in this fashion. The Stoics also ascribe a central role to *pneuma*: (i) they think that it is connate 'warm air' with which living beings are born and (ii) they also account for various living activities in terms of *pneuma* and the hierarchy, or scale, of the beings in terms of its different degrees of tension.[377] (iii) They also explain that the feeling of pleasure and pain brings about expansion and contraction. Such emotions as pleasure and pain are described as irrational movements of the soul or weaknesses in it.[378] The Stoics think that the soul itself is that which expands or contracts. However, the *pneuma* identified with soul is not any *pneuma*, 'but a specific level of *pneuma*, with the degree of tension required for it to function as *pneuma psuchikon*, the *pneuma* of the soul'.[379] In this way, the Stoics explain different classes of animals *only* in material or physiological terms. Thus they appear to believe that psychological activities can be also explained in terms of material constituents and structures.[380]

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[376] Verdenius (1983), p. 101; cf. Rist (1989), p. 131.
[377] For the Stoic conception of *pneuma*, see e.g. Long and Sedley (1987), esp. 47 A-T; Annas (1992), pp. 37-70. Extensive references to the Stoics can be found in their bibliographies.
[378] Cf. Annas (1992), pp. 103-113; Long and Sedley (1987), e.g. 65 A.
[379] Annas (1987), p. 53. See e.g. Long and Sedley (1987), 47 N.
[380] See Long and Sedley (1987), 45 A-H and their commentaries on the fragments.

Looking at Aristotle's account of the relationship between *orexis* and *pneuma* from the Stoic point of view, it seems that we might be able to identify their states since we can explain that an animal is in the state of pleasure if we can observe the heating and chilling of the *pneuma* in the heart. Similarly, the expansion and contraction of the heart area by *pneuma* is identifiable with the subject's state of *orexis*. This, however, is not the case for Aristotle. Aristotle tells us that looking only at a material or physiological side of a living being is not sufficient to account for what it is, but it is also necessary to look at its psychological side which differs in kind from the former. He would say that if material constituents and structures were all there are to constitute a living being, then we could construct a living being out of matter. If they were, Aristotle would acknowledge the resurrection of a living body out of a lump of matter. One immediate piece of evidence against this view is his homonymy principle that distinguishes a dead body from a living body and that emphasises the significance of the form (see Ch. II). In effect, at *DA* e.g. 408b 1 ff. Aristotle has made it clear that the change of a living being cannot be explained in terms either of the soul or the body alone without involving each other. Moreover, his statement at *MA* 703a 4-6 cited earlier immediately suggests that he is trying to find a corresponding bodily substance whose activity can be placed on the same level as that of the psychological activity. For Aristotle, *pneuma* itself is not the soul, though he wants to relate it closely to the capacity for *orexis*. However, he derives the animal's possession of *pneuma* from its possession of the capacity for *orexis*, but not the other way around.[381]

When Aristotle is concerned with living beings, he does not ask why plants should have only the capacity for nutrition and reproduction. But he rather asks what kinds of bodily parts are necessary for them to perform their activities. Moreover, for him the activities of

[381] See e.g. Burnyeat (1992), esp. pp. 22-23; M. Frede (1992), p. 97 ff.

the animal are not any activities, but activities for the sake of an end,[382] which is the survival of the individual and, also, the preservation of its species. All the same, the question about why locomotive animals move towards a specific end is not to ask why they should have the capacity for locomotion, but what the capacity is for and what kinds of physiological parts and structures are necessary for the capacity (e.g. *PA* 662a 33-b 14). As noted, Aristotle ascribes the locomotive faculty to those living beings that are capable of determinate locomotion; that is, he employs the faculty to explain why such locomotion is peculiar to some animals. Given that there is such a psychological capacity that accounts for locomotion, Aristotle embarks on searching for a physiological substance that is necessary for completing the overall picture of them. For a psychological capacity to be actualised it must be embodied (e.g. *DA* 414a 19 ff.). Indeed, locomotion is of the animal, not of the soul apart from the body. The conception of *pneuma* emerges at this stage in the need for explaining in what kind of a physiological substance *orexis* should be actualised.

Although this line of top down explanation is granted for Aristotle, one might still remain unconvinced. For it is one thing to claim that a living being cannot be explained only in terms of its material constituents, quite another to explain away the impression that it, nonetheless, seems possible to identify it with, or explain it in terms of, the state of matter. That is, according to our earlier discussion, it does appear that if we could examine the exact amount or temperature of the *pneuma* in the heart, we could identify the state of feeling pleasant with, explain it in terms of, the state of the *pneuma*. For the feeling of pleasure or pain always involves the heating or chilling of *pneuma*.

However, we have to note that the point of the identity theory is that, if A can be identified with B, B must be identified with A. Thus it seems that, if Aristotle maintains that

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[382] See Furley (1996), pp. 74-76. Cf. Sorabji's argument that a function of animal bodily parts is not only for survival, but also for other goods (1964, p. 293 ff.).

the feeling of pleasure and pain is due to only *phantasia*, for instance, then he has to acknowledge that the type of the state of *pneuma* in the heart will be identified with the state of *phantasia* and commit himself to the type-type identity theory. However, we saw in Ch. IV that the feeling of pleasure or pain might also be aroused by sense-perception or thought.[383] In effect, we saw that Aristotle appears to maintain that there are four possible types of the locomotive faculty or the source of locomotion; that is, in arousing locomotion, there might be a combination of (i) sense-perception and *orexis*, (ii) sense-perception, *phantasia*, and *orexis*, (iii) *phantasia* and *orexis*, or (iv) thought and *orexis*.. Thus, even if we could examine the state of *pneuma*, we cannot tell whether the feeling that arouses *orexis* is due to sense-perception, *phantasia*, or thought. For the same reason, the expansion or contraction of *pneuma* cannot be identified with *orexis*. For there is no way to tell which of the psychological capacities are involved in the arousal of it. All the same, when we observe an animal's locomotion, we cannot tell what kind of locomotive faculty is involved.

In consequence, although, at first glance, Aristotle's claim that the actualisation of a particular type of a psychological capacity necessitates a particular change of the material substance '*pneuma*' appears to suggest his commitment to the type-type identity theory, this is not the case since he does not acknowledge the reverse. We can explain Aristotle's anti-reductionism in a similar way. The four types of locomotive faculty suggest that Aristotle's ground for resisting the reduction of the psychological to the material relies on the belief that the talk of the state of *pneuma* does not explain what kind of locomotive faculty it refers to. That is, since the psychological cannot be explained wholly in terms of the mateterial, Aristotle evades any commitment to reductionism.

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[383] See Ch. IV, esp. Sec. 2 (*b*) and (*c*).

Summary

Aristotle believes that what it is to be an animal organ that functions in a certain way (though the organ might be structured differently in a different species of the animal) and, more generally, what it is to be an animal of a certain species have a close relation to the involvement of the fundamental material substance *pneuma* in the animal. As noted, for him the structure of the bodily organs of the animal is related to its capacity for performing the activities that are necessary, in the end, for its survival. And the animal has such a capacity in virtue of its soul.

The question we have raised in the present chapter is whether Aristotle would acknowledge that such a capacity can be actualised in anything other than the physiological substance, *pneuma*. There is no doubt that his introduction of *pneuma* is to explain the activities of the living being. For instance, Aristotle appears to think that for an animal to arouse locomotion, it must have *pneuma* that plays the role of changing heat or coolness to expansion or contraction. His ascription of such characteristics to *pneuma* appears conceptual rather than empirical since he derives the necessity of that sort of substance from the necessity to explain living beings' activities. That is, he discovers the substance from the observation of animal activities rather than the direct observation of *pneuma*. For instance, from the observation of an animal's movement in place he infers that it must have the capacity to perceive an object at a distance, the capacity to desire what appears to be pleasant, and the capacity to move. From this inference, he again infers what kind of material substance the animal requires in order to be capable of its capacities. He could have named *pneuma* differently. However, this does not mean that Aristotle allows that there might be some other substance in which the soul-capacities can be actualised. That is, he does not consider the possibility of the existence of any other substance that might have

the same characteristics as *pneuma* does. Aristotle does admit that different animals might have differently structured sense organs for the same function. However, when it goes down to their ultimate constituents, he does not think that there are any other elements than the simple bodies and *pneuma*.

Conclusion

This thesis initially raised the questions whether Aristotle acknowledges the existence of the self-mover and in what way he accounts for its motion. In dealing with those questions, we have examined Aristotle's resolutions to the following theses:

(i) Everything that moves is moved by something else.
(ii) The living being initiates its motion without being moved by anything else other than itself.
(iii) The living being has two parts, the unmoved moving part (the soul) and the moved part (the body).
(iv) The soul is not moved by anything else, though it might be accidentally moved by virtue of being embodied.
(v) The soul is a mover (in the *Ph.*) or an *aition* (in the *DA*) of the body.
(vi) The body of the living being must be ensouled
(vii) A dead body is not a body at all.

The 'something' in (i) is an external mover since it is based on Aristotle's conviction that everything is ultimately moved by the first mover of the universe. Thus, anyone who believes, or wishes to argue, that Aristotle acknowledges the existence of the self-mover, i.e. (ii), first of all has to find a way to explain (i), since (i) denies any such existence from the outset. The difficulty arises when one thinks of (i) and (ii) as incompatible with each other and tries to accept one and dismiss another. For there is no doubt that Aristotle consistently endorses both theses. (iii) might well be taken to imply the approval of (ii) because it suggests that the living being as a whole does not necessarily require any external mover.

However, the suggestion that Aristotle denies (i) on the ground of (iii) is rejected by the passages at *Ph.* VIII. 2, 253a 11-20 and 6, 259b 6-17 where he relates the motion of the living being to the environment, which is ultimately related to the first mover. In contrast, those passages cannot be taken as conclusive evidence for the denial of (ii) because, also, of the implication of (iii). I thus argued that Aristotle adopts a compromising view between (i) and (ii), namely, he is searching for a special status for the motion of the living being while, at the same time, maintaining the claim that it requires external movers.

In effect, (i) conflicts not only with (ii), but also with the conception of nature defined as the source of motion that belongs to all natural beings including non-living beings. The point is that Aristotle's introduction of (iii) is to distinguish the motion of the living being (i.e. self-motion) from the motion of the non-living being (i.e. natural motion), not to claim that self-motion is exempt absolutely from the thesis (i); that is, Aristotle thinks that (iii) satisfies (ii), but not (i). He, in effect, conceives (iii) as a characteristic mark of self-motion of which the living being is capable. Theses (iv)-(vii) articulate the characteristics of the internal parts and their relationships with one another. The question about the implications of (iv)-(vii) is eventually narrowed down to the question of how to understand Aristotle's hylomorphic distinction between soul and body.

It is clear that Aristotle's hylomorphism is applicable to the animal as well as the artefact, both of which have the simple bodies as their constituents. This promptly suggests that Aristotle might have maintained that the soul-body relationship is contingent because the form-matter relationship in the case of the artefact (that is also composed of the simple bodies) is no doubt contingent. However, this is only an attempt to understand the soul-body relationship of the living being from the form-matter relationship of the artefact, but never to understand the latter from the former. We saw in Chapter I that Aristotle contrasts

living beings' capacity to produce two-way motion with non-living beings' one-way motion. However, non-living beings here are not artefacts, but the simple bodies. This might well be taken to suggest that Aristotle thinks that the soul-body relationship of living beings must be understood as the form-matter relationship of the simple bodies, not as that of artefacts.

On the other hand, if all sublunary beings are composed only of the simple bodies, then the difference between living beings and artefacts is the difference in proportions of the four simple bodies constituting them. And the distinction between them appears merely conceptual. However, in distinguishing the locomotion of the animal and the locomotion of the puppet (which is no doubt an example of the artefact) in the *MA*, Aristotle introduces *pneuma*, which is a physiological substance that belongs only to the animal. Thus the animal is distinguished from the puppet on the ontological level. Also, Aristotle's remarks on the conception in the biological writings are sufficient to show that he thinks of it as an indispensable physiological substance the presence of which distinguishes the animal from the puppet.

Nonetheless, Aristotle does not say that if something involves certain materials as its constituents, it necessarily has certain capacities, but, in fact, the other way around; that is, the animal is constituted of such and such elements, because it has those capacities. This is, I think, his primary reason for giving priority to the soul in the *DA* and in *Met.* VII. However, we can often witness that Aristotle is, nevertheless, anxious for the reader not to be misled by his statements. He thus at times tells us that the physiological aspect must not be forgotten or ignored. This tendency is more explicitly shown in *Ph.* VIII where he discusses the problem of self-motion in general and in the *MA* where he focuses on self-locomotion. In both treatises, Aristotle treats the soul and the body in terms of the unmoved moving part and the moved part in *Ph.* VIII and in terms of the psychological

process and the physiological process in the *MA*. It has been clear that there cannot be the soul without the body or the body without the soul and, also, that the soul itself is not the body. The living being has the essential body without which the soul cannot be actualised at all.

In the present thesis, I have focused on analysing Aristotle's remarks on the involvement of the psychological and the physiological activities in the arousal of locomotion. We saw in Chapter III that Aristotle's emphasis on animal locomotion is to claim that the capacity for sense-perception is not for its own sake, but for the sake of bringing about *orexis* and locomotion (which is ultimately necessary for maintaining life). That is, granting that the locomotive animal has the capacity for nutrition and the contact senses, it also requires the capacity for either sense-perception (the distance senses) or *phantasia* or thought each of which brings about *orexis* and, eventually, locomotion. However, to say that the animal has such soul-capacities that bring about its locomotion is not to say that the animal is capable of locomotion without reference to the presence of the external object, but to say that its presence is not a sufficient condition for bringing about locomotion without the capacities in the animal.

However, this explanation does not show any significant difference between natural motion and self-motion. For, as seen, the simple bodies also have some capacity of their own without which they are not capable of exercising their one-way natural motion. In other words, whether it is one-way motion or two-way motion, Aristotle undoubtedly acknowledges that the agent must have a certain capacity within itself in order to arouse its own motion. However, the characterisation of the two-way motion of the living being is not only to say that the living being has a nature to move itself when nothing hinders or, in other words, when sufficient *external* conditions are provided, but also to say that it has a

nature not to move even in such a case, depending on its *internal* condition. That is, the simple bodies tend to actualise their natures to move themselves whenever sufficient *external* conditions are provided, whereas, in the case of animal locomotion, the animal might or might not move around even if delicious food is always nearby. That is, animal locomotion depends on the animal's inner state of hunger, whereas the motion of the simple bodies largely depends on external conditions. However, it is to be noted that the expression that 'the motion of the simple bodies depends on external conditions' must be distinguished from the expression that 'their motion is explicable by referring *only* to external conditions'. For their motion is explicable in terms of external conditions given that they have within themselves the sources to actualise their natures.

Furley states that "I am not sure that it would be worth struggling [for Aristotle] to retain the concept of the animal soul as *unmoved* mover.[384] The point is that external objects are not in themselves sufficient causes for the voluntary movements of animals. But they do have some effect on the soul, and it would be obstinate of Aristotle to deny that the effect can be called a movement." I think that Furley's uncertainty is due to his neglect of the fact that Aristotle's reason for discussing self-motion is not only to consider it in relation to the first mover of the universe, but also to distinguish it from the motion of non-living beings. As shown, external conditions are sufficient neither for the arousal of self-motion nor for the arousal of natural motion. Thus the phrase that 'external objects are not in themselves sufficient causes' cannot explain the distinct motion of the animal from that of the simple bodies. The point is rather that, granting that animals have their natures to move themselves and that there are sufficient external conditions, they, nonetheless, might not

[384] Furley (1978), p. 65.

move around. This capacity for not moving around is also described as their nature, which is a good reason to describe animal soul as an unmoved mover.

Aristotle's theory of self-motion appears plausible when, and only when, we accept that the self-mover is also under the influence of the ultimate first mover which is responsible for the motions of all natural beings. In contrast, when the two conceptions are considered as incompatible, we face a serious difficulty from the outset. We have seen that Aristotle does not think of self-motion in an unqualified sense. On the basis of our earlier claims that both the simple bodies and the living being are moved movers when they are considered with reference to the first mover of the universe and that Aristotle's hylomorphism is applicable to all natural beings, we can now conclude that although there is such a clear difference between the two types of motion, we can explain both of them in terms of nature in the sense of the soul (or the psychological capacity) or in the sense of the form alone in so far as the essential physiological (or material) substance is presupposed or taken for granted.[385]

There is no doubt that, since Aristotle ascribes a special role to *pneuma* that exists only in the living being, it deserves a scrutiny in giving an account of the living being. I have chosen locomotion as an example because it clearly shows not only the role of *pneuma*, but also the involvement of other psychological activities. However, focusing on animal locomotion gives one resolution to one disputed question and leaves at least two further questions unanswered. Firstly, since the arousal of locomotion involves other psychological activities, the analysis of the relation between locomotion and *pneuma* shows that not only locomotion itself, but other activities involved in arousing it, must involve a physiological change (which undermines the claim that there is no physiological change in the activities of

[385] See Lloyd (1992), pp. 52-53.

sense-perception, thought,[386] etc.).[387] On the other hand, it is not quite clear how our analysis of animal locomotion concerning the relationship between soul and body can be applied to plants, though it was partially dealt with. For instance, there is a question whether Aristotle can evade reductionism in the case of nutrition and reproduction of the plant in the same way as he did in the case of animal locomotion. Also, there arises a question about human actions involving moral responsibility. That is, if the capacity for self-motion is ascribed to all living beings (so non-human living beings are also responsible for their own motions), why should human beings alone be said to be responsible for their actions?

My interpretation of *pneuma* as an essential substance without which soul-capacities cannot be actualised is, of course, based on Aristotle's actual remarks on the conception of *pneuma*. Nonetheless, the authenticity of my interpretation is still subject to dispute since it is not possible to know what Aristotle really had in mind or whether he really gave as much weight to the conception as I do. However, this kind of uncertainty is indeed the main reason why the correct interpretation of Aristotle's hylomorphic distinction between soul and body has been unceasingly disputed over the last two millennia. Since such an uncertainty is inevitable, what we can do is to collect as much evidence as possible and try to make the best sense of it.

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[386] It is to be noted that my claim is that, in so far as the rational faculty is involved in the arousal of locomotion, it must involve a physiological change. Thus I am not concerned with the special status of the active *nous*.

[387] To recapitulate: I have discussed in Ch. IV that sense-perception (e.g. smelling), *phantasia*, and thought play the role of recognising an object as pleasant or painful and, in Ch. V, that, whenever the animal feels pleasant or painful, the *pneuma* in the heart becomes hot or cold. On the other hand, whenver the animal has *orexis*, the *pneuma* either expands or contracts. Thus I have concluded that there is undoubtedly a physiological change in the actualisation of psychological activities that are involved in the arousal of locomotion.

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